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A STUDY TO DEVELOP AN IMPLEMENTATION PLAN FOR A  
CENTRALIZED MATERIEL MANAGEMENT SYSTEM AT THE  
U.S. ARMY MEDICAL DEPARTMENT ACTIVITY,  
FORT SILL, OKLAHOMA

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by

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No centralized materiel management program can be successfully implemented without the wholehearted support of the department of nursing. Without the cooperation, the input, and the technical expertise of nursing personnel, this study would have been ineffective. CPT Beach's and SFC Kimbrough's interest and involvement were especially invaluable.

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U.S. Army-Baylor University Graduate Program in Health Care Administration, offered their continuous encouragement throughout the residency year.

Abstract

(2)

The intention <sup>was</sup> at this time <sup>is</sup> to select and implement a plan to convert the present decentralized materiel management system to a form of centralized management prior to occupancy of the new facility. The goals of any supply system to be implemented in place of the present system are to better control quantity, quality, and cost of consumable supply inventories and to free the limited nursing staff to perform their intended patient care functions. The selection of the system and the formulation of an appropriate implementation plan must be approached in a systematic manner to assure accomplishment of these goals.

#### Problem Statement

The problem was to develop an implementation plan for a centralized materiel management system at the U.S. Army MEDDAC, Fort Sill, Oklahoma.

#### Objectives

The objectives of the project were to:

1. Conduct a comprehensive literature review of materiel management systems;
2. Identify and describe the present decentralized system;
3. Distinguish and evaluate centralized systems presently functioning in medical facilities;
4. Recommend a centralized materiel management system that best meets the needs of nursing and administration in performing the mission of the U.S. Army MEDDAC, Fort Sill, Oklahoma.

Keywords: Materiel Distribution System (MDS), Medical Equipment, Logistics Management, Medical Facilities, supplies

(56)

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## CHAPTER I

### INTRODUCTION

#### Background Information

The Logistics Division of the U.S. Army Medical Department Activity (MEDDAC), Fort Sill, Oklahoma, employs a decentralized system to provide consumable medical and surgical supplies to patient care areas. In an environment of limited resources, the supply system utilized by the Fort Sill MEDDAC must be as effective and efficient as possible. Two major concerns of the present "requisition and delivery" system are (1) the cost of inventory and (2) the use of patient care personnel as managers of consumable medical and surgical supplies.

The Fort Sill MEDDAC operates a medium-sized hospital, consisting of 187 short-term, acute care beds and 27 bassinets, with a wide range of inpatient services, to include medicine, surgery, pediatrics, obstetrics and gynecology, and an extensive family practice. The MEDDAC also provides a full range of primary and emergency care services and a broad spectrum of ancillary and support services.

The facility was first opened in 1965, and the beneficiary population quickly outgrew the available space and services. Construction of the new hospital facility is scheduled to begin in August, 1986, but the building will not be completed until at least 1991. Included in the facility plan is a materiel distribution system incorporating a cart exchange system for consumable medical and surgical supplies.

### Criteria

The criteria for assessing the effectiveness of the recommended system were:

1. The system must be able to operate effectively with the materiel distribution center located off-site in Building 4516, which is across the street from the main hospital.
2. The system must be able to operate with minimal staffing obtaining from present MEDDAC resources.
3. The implementation of the system must not decrease the level of service to any area presently being serviced by Central Materiel Supply or the Medical Materiel Branch.
4. The equipment purchased and the system adopted must be able to be utilized in the new hospital facility.
5. An inventory cost savings must be realized.
6. The nursing staff responsibilities for supply management must be decreased.
7. The system operations must only minimally disrupt nursing duties (as determined by the Chief Nurse).
8. The system should facilitate greater control over inventories and support the standardization process.

### Assumptions

For the purposes of this study, it was assumed that:

1. No additional manpower from outside the Fort Sill MEDDAC will be made available at the time of implementation.
2. Funds allocated for construction of the new hospital (BLIC F) can

be utilized for equipment acquisition.

3. Base operations support will be available for required renovation of the building and installation of telephones for the Materiel Distribution Center (Building 4516).

#### Limitations

This project was constrained by the following factors:

1. The Materiel Distribution Center will be located off-site from the main hospital in Building 4516.
2. The only funds available to purchase equipment for the materiel distribution system are new hospital construction funds (BLIC F). Use of BLIC F funds mandates that whatever equipment is purchased must be utilized in the new facility.

#### Literature Review

Information on health care materiel management, while limited, is comprehensive in its scope. This review addresses the concept of materiel management, the various systems available, and the way in which to select and implement a centralized materiel management system successfully.

#### Materiel Management

Materiel management encompasses a myriad of functions, which include acquisition, processing, distribution, and control of all forms of materiel. Often these functions are managed by individual hospital departments.<sup>1</sup> This duplication of effort is expensive.<sup>2</sup> A materiel manager strives to "contain costs in the materials area through the

reduction and better use of personnel, supplies, paperwork, and inventory."<sup>3</sup> This requires management and control of supplies and equipment from acquisition to disposition throughout the organization.

Many texts and references are available on materiel management in industry. Information on health care materiel management, specifically in the hospital setting, is more limited as this field is considered a distinct form of materiel management. Materiel management in the military is performed by the logistics division. The scope of the division's authority and responsibility is more limited than in the private sector.

In 1976, Wilbur J. Balderson, Deputy Chief of the Logistics Division, Office of the Surgeon General, Department of the Army, remarked that military materiel management "places all healthcare facility logistics responsibilities in the hands of resident medical logisticians, freeing patient-care personnel to concentrate on their primary missions."<sup>4</sup> During this same time frame, the Hospital Supply and Services Division was renamed the Logistics Division. Balderson also denoted the materiel distribution center as providing a single source of supply for most items.<sup>5</sup>

Housely, in his book Hospital Materiel Management, describes materiel management in the modern hospital as:

the management and control of goods, services, and equipment from acquisition to disposition, encompassing the following areas:

- writing and adhering to product specifications;
- procuring all supplies and services through centralized purchasing;
- receiving and accounting for all supplies;
- stocking supplies for "adequate" periods of time only;
- studying and reviewing utilization of the materiel;
- developing and adhering to policies and procedures for product utilization;

- standardizing and evaluating all products and services;
- processing and reprocessing reusable supplies and materiel;
- distributing all goods and services;
- controlling "unofficial" inventories;
- assuming accountability for capital equipment;
- reviewing and servicing patient care equipment;
- controlling printing and all printed matter, including xerography;
- reviewing and evaluating patient charges; and
- disposing efficiently of the waste products of the goods and services purchased.<sup>6</sup>

This concept of modern materiel management is actively being embraced by the military, as evidenced by the recent publication of Army Regulation 40-61, Medical Logistics Policies and Procedures, dated April 30, 1986; for example:

#### Chapter 8

#### Medical Logistics Services Management in Health Care Activities

#### Section I

#### Overview

#### 8-1. Medical logistics services

a. In health care facilities, medical logistics functions can include the following:

- (1) The acquisition, receipt, storage, issue, movement, maintenance, repair, and accountability of materiel.
- (2) Hospital housekeeping.
- (3) Real property repair and maintenance.
- (4) Interior decoration.
- (5) Construction.
- (6) Linen and laundry support.
- (7) Waste collection and disposal.
- (8) Transportation.
- (9) Communications (in conjunction with the adjutant and the plans and operations staff).
- (10) Equipment installation and site preparation.
- (11) Equipment calibration and certification.
- (12) Optical fabrication.

b. The Logistics Division will provide these services or coordinate their delivery with the appropriate installation-level support activity. Whether the Chief of Logistics has operational or staff responsibility is based on the mission of the facility, the parent command, and Army policy. MEDDAC [Medical Department activity] and MEDCEN [medical center] procedures will provide for the accomplishment of logistics functions. Local procedures will inform supported activities of how to obtain logistics service.

#### 8-2. Logistics services management programs

a. TSG [The Surgeon General] (DASG-HCL) will develop logistics programs and systems.

b. Major medical commands and command surgeons will implement programs as directed by TSG.

c. The Chief of Logistics is responsible for all logistics operations in the facility and satellite activities to the extent authorized by major medical commands and command surgeons.

## Section II

### Materiel Distribution and Collection Systems

#### 8-3. Overview

a. Materiel Distribution and Collection Systems (MATDACS) are internal hospital systems designed to increase efficiency and cost effectiveness in the provision of medical logistics services. New hospital facilities will be designed with MATDACS. In existing facilities, MATDACS will be established by activity commanders when review and analysis clearly indicates that efficiency and cost effectiveness can be enhanced. MATDACS will operate on a schedule tailored to the needs of supported activities. MATDACS may be applicable to other types of health care activities such as dental clinics, TMCs [troop medical clinics], laboratories, and other activities not located within a hospital facility.

b. At activities with automated MATDACS, both procedures and equipment will be able to adapt to future improvements. Provisions will be made for backup modes of operation in the event automated support is interrupted due to equipment breakdown or power failure.

#### 8-4. MATDACS objectives

a. Provide medical logistics services in the most efficient and cost-effective manner possible.

b. Enhance patient care by improving the timely availability and delivery of items required to support health care services.

c. Improve utilization of personnel, relieving medical and nursing staffs from performance of nonpatient care duties.

d. Reduce operating costs and supply inventories at the user level.

e. Improve the flow of materiel through--

- (1) Centralized management of the materiel flow.
- (2) Automatic resupply of routine-use items.
- (3) Direct contact between logistics personnel and users.
- (4) Direct delivery to the user level.

f. Provide safe and efficient delivery and recovery of equipment.

#### 8-5. Items eligible for MATDACS

a. The following items are eligible for a MATDACS under the management and control of the Logistics Division:

- (1) Medical supplies.
- (2) Nonmedical supplies.
- (3) Linen.
- (4) Waste (contaminated and noncontaminated).

b. Other MATDACS may be in operation in the hospital, under the management and control of divisions other than the Logistics Division. For example, a separate MATDACS may exist for food, operated by the Food Service Division. The following items may also be delivered and collected by an internal hospital system:



- (1) Sterile supplies from the central materiel service.
- (2) Mail.
- (3) Medical records.
- (4) Administrative forms.
- (5) Flowers.

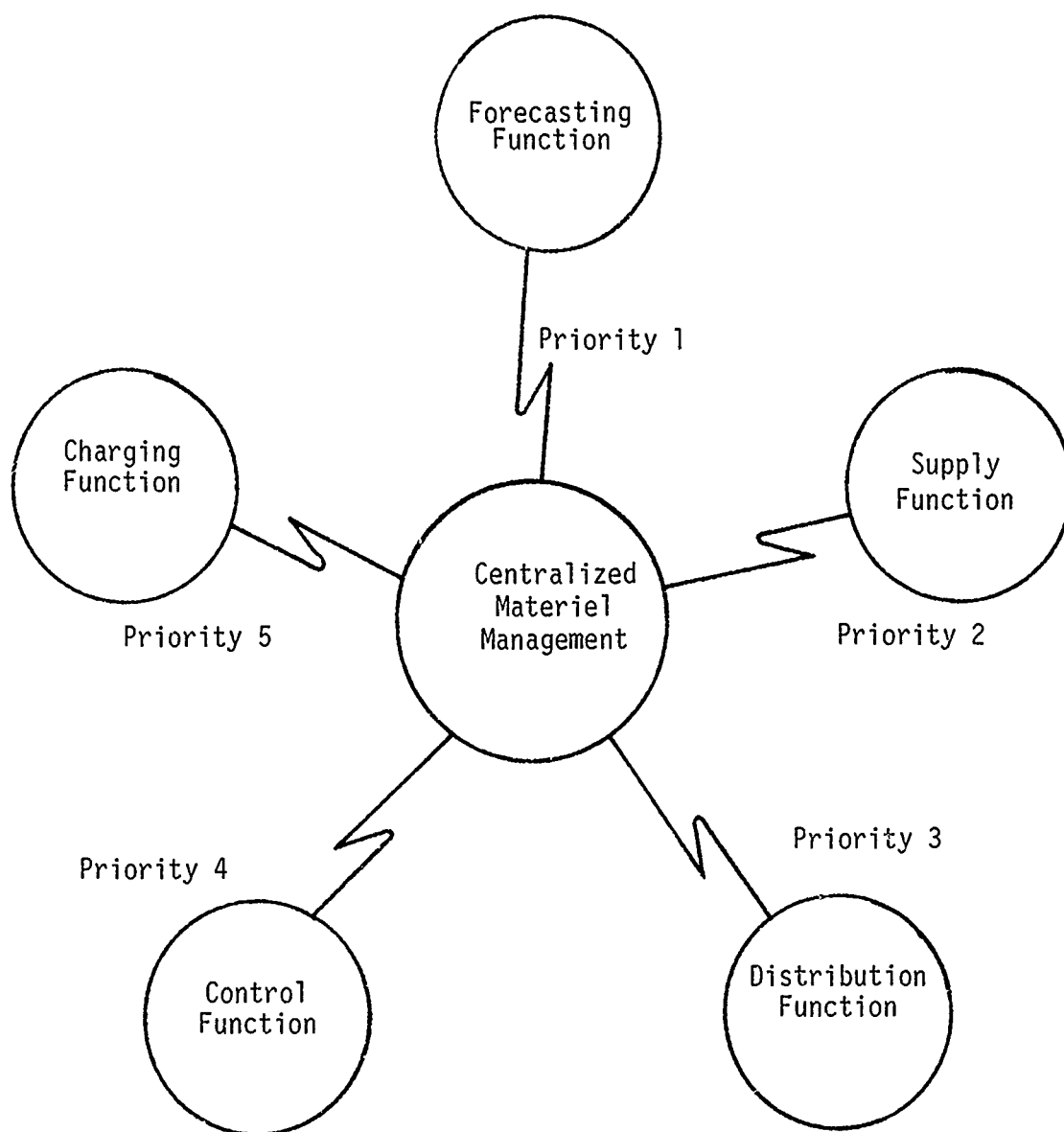
c. The items in paragraph 8-5b may be processed by a Logistics Division MATDACS if deemed appropriate by the hospital commander. If items are assigned to a Logistics Division MATDACS, there must be strict adherence to the handling procedures, security measures, and/or environmental control required for all items.

d. The determination of which items will be managed with a MATDACS may be based on--

- (1) Cost impact at the Logistics Division and at user levels.
- (2) Physical plant factors supporting the use of a MATDACS.
- (3) Utilization and staffing of personnel.
- (4) Storage and handling capability at user level.<sup>7</sup>

Distribution is a key function in the materiel management arena. It affects the performance of the entire program. "For every dollar spent to purchase an item another dollar is spent storing and moving it."<sup>8</sup> Edward D. Sanderson states that there are five basic distribution systems in common use in the health care field: (1) the traditional requisition and delivery system; (2) the method commonly referred to as "fetch and carry," which is a variation of the traditional system; (3) the PAR-level stockage system; (4) the exchange cart system, which is actually a form of PAR-level; and (5) the stockless inventory system.<sup>9</sup> These systems are each centralized to various degrees.

Centralized materiel management systems place all supply, processing, and distribution functions under a central authority and have proven to be effective, efficient, and less costly.<sup>10</sup> They were developed to bring order to a variety of distribution systems.<sup>11</sup> These systems perform the five integral supply functions of: (1) supply forecasting, (2) distribution, (3) supply, (4) control, and (5) patient charge accounts.<sup>12</sup> These functions are graphically depicted in Figure 1.



SOURCE: Adapted from Charles E. Housley, Hospital Materiel Management (Germantown, Md.: Aspen Systems Corporation, 1978), p. 184.

Fig. 1. Important Functional Roles Met by Centralized Materiel Management System

Centralized materiel management utilizes a materiel distribution service (general stores), which allows units of measure (individual items) rather than units of issue (bulk) to be requisitioned. This service is staffed by trained logistical personnel to provide a variety of types of supplies. Centralized materiel management creates structure for greater control, increased standardization, and improved customer satisfaction.<sup>13</sup>

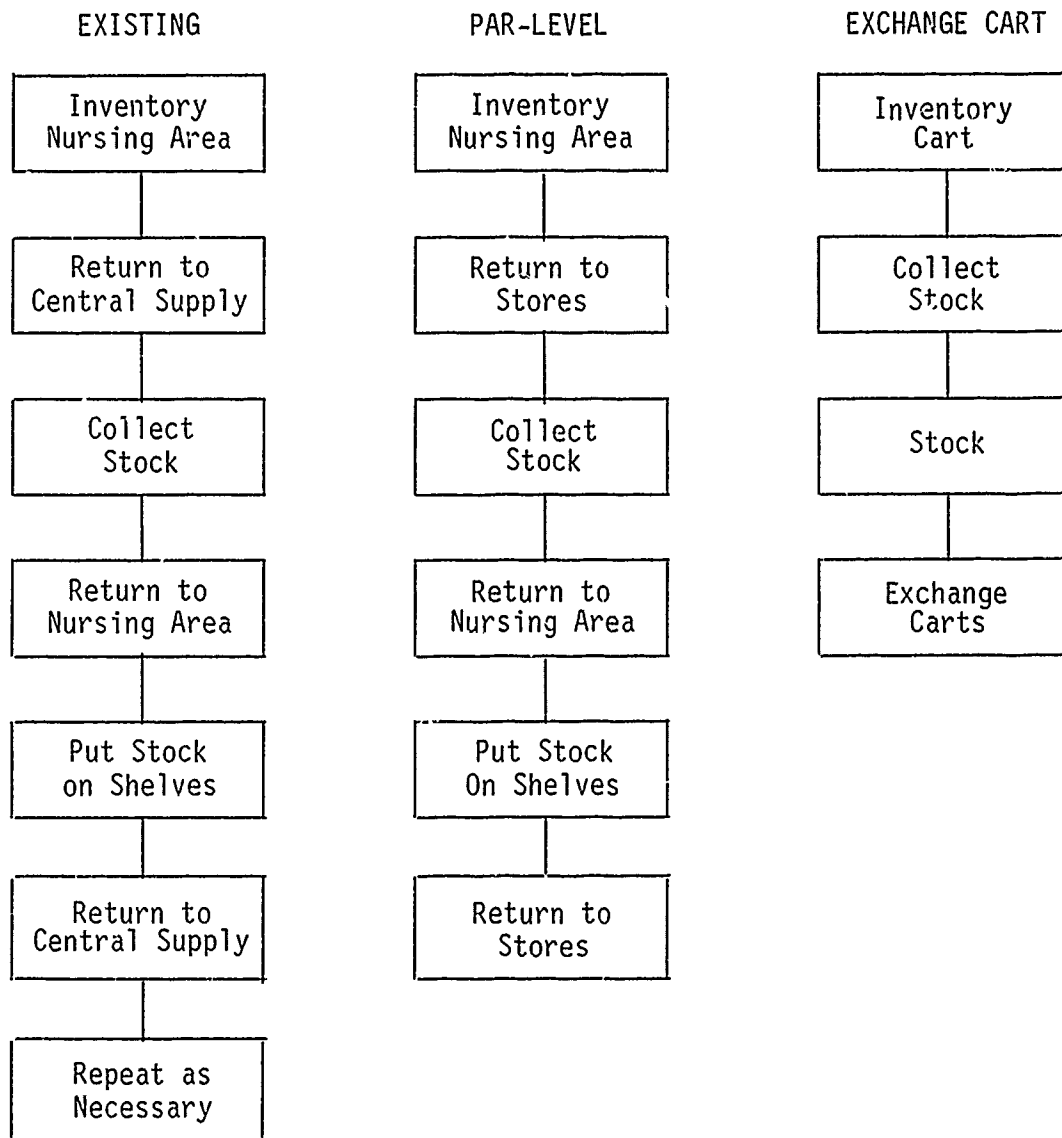
Kowalski states that supply distribution has key relationships with other materiel management functions, to include inventory management, warehousing, service levels, and patient supply charges.<sup>14</sup> The materiel distribution center has extensive impact on inventories. Inventory management can be successful with accurate monitoring of supply levels.<sup>15</sup> If closer managerial attention is provided to inventory control, considerable cost savings can be achieved.<sup>16</sup> "Unintentional central inventory build-up is caused by the lack of an effective system to maintain economical supply levels and a habit of overbuying to compensate for slow or unreliable system performance."<sup>17</sup> Henning states that an effective materiel management program can produce substantial savings not only in central inventories but also in revenues, personnel, and purchasing.<sup>18</sup>

Each type of distribution system has distinct advantages and disadvantages. The goal of any effective distribution system should be to get "the right supply to the right place at the right time in the right quantity."<sup>19</sup>

### Systems Available

Requisition and delivery system. A requisition and delivery system requires a great number of steps (see Figure 2) and the handling of materiel several times by various personnel. The user is responsible for maintaining adequate levels of supplies in the user area. On a periodic basis, the user must inventory the supplies in the area and determine what needs to be ordered. Requisitions are filled out and submitted to general stores. General stores then fills the order and brings the supplies to the user area. The user must receive the supplies and store them in the user storage area. The "fetch and carry" variation of this traditional system requires the user to carry the requisition to general stores, receive the items, and transport them back to the user area. If materiel management is centralized to a degree, this system will allow for individual items to be issued from the materiel distribution center. If not, then the user will receive bulk quantities of supplies.

This system is a very traditional means of providing supplies to user areas. Kowalski feels that the advantages of this system are that it is simple, it incurs little capital investment, it is a traditional system, and a feeling of power and control is maintained by the user. The disadvantages include the fact that, because the system is controlled by the user, the health care facility is utilizing patient care providers, who are highly trained, highly skilled, and highly educated in patient care, to act as supply managers. With this system, more storage space is used, which is costly.<sup>20</sup> With this system, one of the last nursing functions to receive attention will be inventorying



SOURCE: Jamie C. Kowalski, "Supply Distribution Options--A New Perspective," Hospital Materiel Management Quarterly 2 (Winter 1980): 90.

Fig. 2. Comparative Flow Diagrams for Supply Distribution to Nursing Floor

and ordering of supplies.<sup>21</sup> As a result, supplies tend to be stockpiled and hoarded at patient care points to preclude interruptions to patient care.

This system is more acceptable to the nursing staff because most nurses are familiar with it. Although they are required to manage the supplies, which can require extensive periods of time away from patient care, they perceive a certain sense of control. This highly decentralized form of materiel management results in a variety of individualized supply methods in each user area and extraordinarily high inventories in user areas, general stores (materiel distribution system [MDS]), and bulk storage. The requisition and delivery system is considered primarily a reactive system.

PAR-level stockage system. This system, as described by Housley, places the management of supplies in the hands of trained logisticians. Predetermined stockage levels are established. On a periodic basis, supply personnel come to the user area to inventory and replenish supplies to PAR levels. This system utilizes the existing storage shelves, cabinets, and lockers already in the user area.<sup>22</sup>

Advantages of the PAR-level stock system center around the fact that it is more centralized. By establishing appropriate inventory levels for all supplies, forecasting for demand can be more accurate and be easily adjusted.<sup>23</sup> Inventory management also is enhanced because bulk issue is not made; rather, actual individual quantities of supplies are stocked. Because only supplies needed to replenish user stock to PAR levels are moved to the wards, there is minimum materiel volume moved through the system.

A primary advantage of this system is that the responsibility for maintaining adequate supplies is transferred from the patient care provider to the materiel manager. This eliminates the need for the nursing staff to take time away from patient care activities to perform this function. Another advantage is that implementation of a PAR-level stockage distribution system requires little capital investment as the existing storage devices are utilized. The only equipment cost involved is the purchase of the transfer carts. The establishment of the materiel distribution center may also be an expense if the MDS is not yet centralized to that degree.<sup>24</sup> An important aspect of this system is that the two primary functions of inventory and restocking are not performed in a central location under expert supervision but rather are conducted in the user area. This results in additional trips to the user areas, causing increased traffic and possibly interfering with nursing activities.

There are several disadvantages to the PAR-level system of centralized distribution. Because existing storage devices are utilized, there is no real reduction in costly storage space requirements. Also, Kowalski and Tilley both feel that this system is more labor intensive because of the maximum personnel movement involved.<sup>25</sup> The workers must travel twice as many times to the areas--once to inventory and once to replenish the supplies. Due to the dynamic nature of hospital inventory, this unproductive trip time creates a gap between the time inventory is conducted and the time actual replenishment is accomplished, which may result in additional trips to the materiel distribution center to obtain adequate supplies to restock to PAR levels. As a result,

restockage is accomplished much more slowly. On the other hand, Gray, in his study, reports that, while most experts feel that the PAR-level system is more labor intensive, in actuality, when time/distance factors are analyzed to establish actual labor requirements, depending on the specific facility, this may not be the case.<sup>26</sup>

Exchange cart system. The exchange cart system is a variation of the PAR-level distribution system. Under the exchange cart method, predetermined stockage levels are established in each user area. Instead of utilizing existing cabinets and shelves for storage, carts containing the entire user unit inventory of supplies are exchanged on a periodic basis.

There are many advantages to the exchange cart system. Kowlaski states that "the cart exchange system has been the most popular of all systems implemented by hospitals in recent years."<sup>27</sup> The exchange cart method is more centralized than the PAR-level system so that inventorying and restocking are accomplished in a central area under supervision. Materiel management is responsible for all aspects of the supplies, and, consequently, nursing personnel are returned to patient care activities.

Inventory management is greatly enhanced. Forecasting abilities are very exact, and demand can be accurately determined. Inventory can also be reduced because user stock factors are known. Additionally, less backup stock is needed in the materiel distribution center and bulk storage can be reduced. As a result of the excellent forecasting ability, stock-out rates should also be reduced in conjunction with the reduction in all types of inventory. This system creates an even



work flow and eliminates the peaks and valleys in demand and requisition.

At the same time that inventories are reduced, the stockage levels are flexible enough that they can be adjusted as required to meet the needs of patient care providers. If restock is forgotten, it is more easily and more quickly replaced with this system.<sup>28</sup> If an area has an extremely high, out of the ordinary usage factor for a particular time period, it is much simpler and faster to exchange the cart ahead of schedule than to make several trips to restock a fixed storage module. In addition, if the MDS is depleted of a certain item, at least twenty-four hours are available in which to obtain the item before the carts need to be exchanged again.

An effective exchange cart system allows nursing staff to perform their patient care functions without fear of nonavailability of needed supplies. The staff also know exactly what supplies are available and when the cart will be exchanged. This is an instantaneous exchange with 100 percent replenishment. There is no lag time between the inventory and the restocking. This system greatly minimizes the disruption to patient care activities. The nursing staff still have input into establishing stockage levels, so they do not lose control of "their" supplies, which results in greater acceptance and minimizes the tendency to hoard against the time when the system does not work.<sup>29</sup>

Information gathering and resultant accountability are greatly enhanced with this system. In the private sector, patient charge accountability is greatly increased and lost charges are decreased significantly.<sup>30</sup> In the military, this translates into improved user accountability and appropriate charges to cost centers.

"Implementing a cart system could reduce inventory stored on the patient care floors as much as 200%."<sup>31</sup> Because there is a much smaller inventory in use, there is a greater inventory turnover, preventing a great deal of waste due to spoilage or obsolescence (expired dated items). Further, quality control is enhanced because items are checked every time the cart is replenished.

Most experts state that exchange cart systems are less labor intensive than PAR-level systems. Materiel is handled only once, when it is placed on the cart, and personnel traffic is minimal. This eliminates expensive, redundant stock handling. While this may be true, the extent to which the system is labor saving is dependent on the individual health care facility.<sup>32</sup>

Standardization is a very effective means of containing costs.<sup>33</sup> In a decentralized system, the myriad of materiel managers creates havoc with attempts to standardize the type of items utilized in patient care. A centralized MDS in conjunction with a working standardization committee provides the degree of control needed to control what supplies are available for patient care and provides a mechanism to obtain needed nonstandard items through one central authority.<sup>34</sup>

A convenience of the exchange cart system is that all like items can be set up on the carts in the same locations. Items are easily seen and located in this way. They are not hidden, as is often the case with conventional storage devices. When staff must float to different areas, locating supplies is much easier. Although each area has requirements for unique needs, the vast majority of supplies can be located easily with this system. Storage space requirements are

reduced and distribution is more controlled because the multiple storage locations of the PAR-level activity, such as shelving units, closets, drawers, and cabinets, are replaced by standard carts. Exchange cart systems save time, paperwork, steps, personnel, inventory, and money. The system is practical, flexible, dependable, and uncomplicated.<sup>35</sup> Many of the advantages and benefits are intangible and cannot be tied to dollar benefits.

The primary disadvantage of the exchange cart system is the capital cost of procuring the carts. In addition, space must be allocated in the materiel distribution center to park the second set of carts not in use on the wards. There may be costs involved in accommodating the storage of carts in the patient care areas because the carts are used in lieu of the existing shelves. Depending on the type of system selected and the facility structure, additional costs may be involved in modifying the walls to accept the weight of hanging carts. Another disadvantage of the system is that there is maximum materiel volume being moved through the system because the carts contain an entire inventory for an activity. This may be viewed as a trade-off for the minimal personnel traffic involved.

Other options. A fifth method of distributing supplies is the stockless purchasing inventory. With this system, a primary vendor is contracted with by the hospital to provide supplies as needed. This form of purchasing represents buying supplies for direct utilization by the respective departments without a duplication or an accumulation in central stores.<sup>36</sup> Direct computer linkups are established and user areas are replenished directly. Central stores and bulk storage are

virtually eliminated. This system can be very costly but effective. Control of materiel management is removed from the hospital. The trade-off is the elimination of the need for supply storage areas and concerns about providing supplies. This method of centralized materiel management is not applicable to a military health care facility.

#### Centralized Materiel Management

The most popular methods of distribution are the PAR-level and the exchange cart system.<sup>37</sup> These systems are compared in Figure 2, above. Implementation of a centralized system must be approached in a systematic manner. Expectations of all staff, especially users, must be discussed. The support of administration, materiel management, and nursing are imperative for the system to work.

There was only one reference that refuted the superiority of centralized over decentralized materiel management. This real-life example involved a very large health care complex with several layers of supervisors and administrators built into the system. The feeling at this facility was that the materiel manager was unresponsive and not knowledgeable enough to meet the needs of the various departments. A centralized system provides a great deal of control, but it can also be slower if high levels of communication and cooperation are not present. The administration of this hospital chose to decentralize and provide department heads with the responsibility and the authority to manage their own supply resources. This move gave each department greater "control" and did not remove these administrators from any type of patient care. The decentralization actually saved manpower and was

much more responsive. From the article, it would appear that the centralized materiel management system was poorly organized and that the management staff was not effective.<sup>38</sup> An alternative to decentralization would have been to reorganize the assets within the department, hire effective leadership, and, most importantly, establish a mechanism to facilitate user input, communication, and coordination.

In discussions of centralized materiel management, expectations, concerns, and needs of all involved personnel are pertinent to effective planning and management of the system. The nursing staff are the personnel who actually use the consumable medical and surgical supplies to provide patient care. James C. Richardson states that, in his experience in implementing an exchange cart system:

Strong input was sought and given by nursing. This was probably one of the most important and effective steps in a smooth transition and implementation. The utmost cooperation was received from nursing personnel because they were made to understand the advantages for their department.<sup>39</sup>

Nursing expectations as delineated by Vicki F. Beahm include timely and responsive services based on interdisciplinary staffing and input. Consistent availability of supplies is a primary expectation, as supplies are a "significant component in the provision of care." The nursing staff also expect the MDS to provide knowledgeable resource people to furnish information on purchasing resources, maintaining a current catalogue library, and providing inservice training and continuing education. An important concern of safety can be more efficiently addressed through recall, quality control and assurance, and currency of supplies with an effective central materiel distribution system. Most crucial for nursing is that, "with the advent of primary nursing,

attention has been refocused on total patient care and increasing the teaching and patient advocacy roles." An MDS can allow patient care personnel to concentrate their efforts on these roles rather than on supply functions. Beahm feels that "open dialogue and communication systems that provide review from all individuals concerned can have a positive impact on realistic and timely delivery of services, cost containment and patient safety."<sup>40</sup>

The logistics division is the actual materiel manager that is responsible for providing consumable medical and surgical supplies in the military. Issues which must be addressed in planning and implementing a centralized form of materiel management are hours of operation, staffing, equipment, actual materiel distribution center, and, most importantly, level of service to be provided.

To limit the number of carts needed and to keep the levels of inventory as low as possible, exchange cart systems are ideally run twenty-four hours a day, seven days a week, with the carts being exchanged on a daily basis. This also allows the system to be as responsive as possible to emergency and nonroutine needs of users. In establishing an MDS, the logistics division has to evaluate whether it will be located on- or off-site. Accompanying transportation requirements must also be provided. Actual design of the MDS must accommodate parking room for the duplicate carts if an exchange care system is utilized or storage for transfer carts for a PAR-level system. The actual setup of the center can facilitate selection of stock and save time and labor in locating items. Suggestions are made to locate items by stock number sequence or in like supply classification.<sup>41</sup>

When selecting actual carts, if an exchange cart system is selected, the materiel managers must look at life expectancy, durability, aesthetics, safety, ability to keep clean, and ease of maintenance. Brzezicki states that one should use as few carts as possible. The carts must be able to hold 145 to 150 line items per cart and a total of 1,200 total items.<sup>42</sup> Housley feels that no more than two carts should be used per exchange and that they should be covered in storage and distribution to insure clean, fresh supplies. The larger the cart, the better.<sup>43</sup>

The administration must provide complete support to insure the system works the first time, as the nursing staff may not provide a second opportunity. The level of service must remain the same or improve with implementation of a new distribution system. The comptroller must also assess how financial accountability will be enacted.

The primary disadvantage to implementation of a centralized materiel management system is the perceived loss of control. Anything new, that is not traditional, will meet with resistance.

#### Analysis and Selection of a System

The first step in analysis is to evaluate and describe the present system. This process involves identifying how the four functions of supply--(1) acquisition, (2) delivery, (3) utilization, and (4) storage--are accomplished. Once the mechanisms are identified, then actual physical inventories must be conducted to determine stockage levels and to establish demand histories for routine, nonroutine, and emergency supplies. The establishment of the materiel distribution center (MDC)

is also crucial. The actual mission and services to be provided by the MDC must be determined. In conjunction with this task is that of determining equipment needs. The number of exchange or transfer carts required can be established from the supply throughput computed from the physical inventories and the demand histories.

Gray has written a four-part series that outlines in great detail how to compare a PAR-level system to an exchange cart system. He recommends documenting procedures step by step for each system and applying time and distance standards to determine labor requirements.<sup>44</sup> Dundon offers life-cycle costing as the most appropriate method for comparison.<sup>45</sup> The important facts to remember are that no one best system for all situations exists and that noneconomic, environmental benefits should be addressed in the analysis.

Kowalski defines environmental factors as those "factors over and above dollars and cents that will help hospitals decide which is the best system for them"; for example:

1. The ability to supervise employees who are providing the service and carrying out the distribution function.
2. The decision as to where the management responsibility and authority for the inventory management and supply distribution function should reside.
3. The traffic required in the routes which must be followed.
4. The space requirements for storage, working, and parking.

Overall, Kowalski stresses examining the return on investment.<sup>46</sup>



### Implementation of a System

The implementation of a system is crucial. There will be no confidence in the system if the users are not educated and kept aware of all developments during implementation. Ferrier states that in order to "minimize resistance to implementation of a new materiel management system the most effective means is to involve in the planning everyone who will be affected by the change." Another tool is extensive inservice training of employees prior to implementation. Ferrier also states that two of the most frequent pitfalls encountered in implementing a system are (1) resistance to change by some employees and (2) reluctance to use pilot programs.<sup>47</sup>

Richardson, in his article "Exchange Carts Really Work," emphasizes the need for a pilot program in his Points to Ponder:

1. Do not unilaterally decide on an exchange cart system. Make administration, nursing, and most departments fully aware of the anticipated changes, their advantages and disadvantages, and the way in which the disadvantages will be solved.
2. Make a timetable and follow it as closely as possible.
3. Use a pilot program to work out any problems before going hospital-wide. The surest way to fail is to go too far too fast. Take one step at a time.
4. Pick the area likely to give the best chance for success and use it for the pilot program.
5. Anticipate and plan. One very dramatic way to fail is to wheel a bright, shiny, well-filled cart to a floor and find that there is no place to store it.

6. Buy a quality cart. A hard-to-transport cart with shelves that soon start to fall off is not ideal.
  7. Do not keep inservice changes a secret from the very people who are to benefit. A well-stocked cart that appears magically each morning will be of minimal use if no one knows what to do with it.
  8. Remember to be flexible with ideas; every hospital is different and must be handled so.
  9. Use an efficient flow pattern to fill carts. When shelves are properly set to facilitate cart replenishing, real time can be saved.
- With proper planning, cooperation, and implementation, it is possible to say "Exchange carts really work!"<sup>48</sup>

Brzezicki reemphasizes the importance of a test site when he discusses criteria for a test site. When selecting a test site, the materiel manager should consider the space available for cart storage, using a patient care area which has a relatively consistent patient load and type and insuring that that area has a high degree of nursing skill and cooperation.<sup>49</sup>

Brzezicki also addresses planning for implementation. His first step is to prepare the MDS. Next, he recommends inventory studies to determine usage rates, trends, and stockage levels. The third planning phase is to solicit outside suggestions from cart manufacturers as to types and quantities of equipment, operating policies, setup of carts, and plans for the MDS. Education plays a big role in planning and should include inservice training for personnel provided by logistics as well as the cart manufacturers. The fifth step is to dispel doubts. This is crucial for validity and confidence in the system as is providing

adequate stockage and good service for nonroutine requests. The final step is the accounting to document usage and provide charges to the appropriate user.<sup>50</sup>

In addressing the actual implementation and operation of the exchange cart system, the users are of the utmost importance in determining stockage levels, assuring acceptance of the system, and making the system work. "Implementation of any new cart system should include active nurse input for cart selection, item arrangement and stock levels based on current use."<sup>51</sup> Implementation of the total concept is what makes it work. Peggy Ryan lists the following key concepts of implementation:

1. Good procedures, well thought through, conscientiously followed, and changed as necessary to establish the continuity essential to the system, are necessary; continuity is the watchword for the system.
2. Interdepartmental rapport establishes and maintains a sense of cooperation that facilitates the success of the system.
3. Administrative support for the philosophy of the system is mandatory.
4. Capable, competent personnel who are dedicated to making the system work are necessary.
5. Budgets adequate to the need for personnel and equipment are needed.
6. Time to plan, to organize, to assess, to evaluate, and to TEACH is imperative. If the purpose of the system is to be realized, teaching must be recognized as one of the most crucial requirements. Personnel must be given time to develop a decidedly positive approach to the system; to discuss the concepts which are desired

and how and who will implement the procedures; and to fully develop the concepts of cooperation and interdependence.<sup>52</sup>

Most important is that, once a system is in place and operational, the benefits of the program must be evaluated and adjustments carried out as needed to make the system as effective and efficient as possible.<sup>53</sup> Brzezicki recommends initially reviewing supply standards monthly; as the operation begins to work smoothly, the standards should then be reviewed at least quarterly.<sup>54</sup> Most authors consulted agreed with the recommendation of a quarterly review, although some were willing to increase that time to semi-annually. All authors mandated that patient care personnel play an active role in the review of supply standards.

Bruce Tilley feels that, in evaluating a system, one must evaluate the impact on cost, labor, employee acceptance, and quality of service provided in relation to cost savings rather than only revenues resulting from increased patient charges.<sup>55</sup> Kowalski also stresses that, once the system is in place, the administration must actually evaluate the benefits, to include inventory management, warehousing, labor utilization, service levels achieved, and return on investment.<sup>56</sup>

#### Research Methodology

The research methodology involved the following elements:

1. Identifying all functional areas and activities that utilize consumable medical and surgical supplies. This was accomplished by utilizing the Uniform Chart of Accounts in the Comptroller Division to get a list of cost centers, then cross-referencing this list

with the Materiel Branch to determine which cost centers actually use this type of supplies.

2. Describing the present decentralized supply system for consumable medical and surgical supplies by identifying resources, staff, equipment, and space utilized by the system. The components of the system within each functional area were addressed, to include:
  - a. Acquisition--the method of obtaining supplies.
  - b. Delivery--the method of receiving supplies.
  - c. Storage--the place(s) and the manner in which supplies are stored.
  - d. Utilization--the method of supply usage (those supplies used and volume and frequency of use).
3. Gaining a thorough and extensive working knowledge of materiel management systems through literature review, research, and evaluation of systems presently in operation in Army medical facilities.
4. Interviewing affected personnel, to include:
  - a. Chief, Logistics Division
  - b. Chief, Medical Materiel Branch
  - c. Comptroller
  - d. Chief Nurse
  - e. Hospital Project Officer
  - f. Wardmasters
  - g. Head nurses
  - h. Chief, Clinical Nursing Service
  - i. Chief, Central Materiel Supply
  - j. NCOIC, Central Materiel Supply

k. Deputy Commander for Administration

As part of these interviews, these individuals' perceptions of centralized materiel management systems based on past experience, research, and problems encountered were discussed. The interviewees' needs, wants, and desires and the way in which they envisioned the system would work were identified and suggestions as to proposed implementation, to include stockage levels and operations, were solicited.

5. Collecting as much information as possible on various exchange cart systems in order to select an exchange cart mode for comparison with the PAR-level system. This was accomplished by gathering data, catalogues, and contract prices from as many manufacturers as possible.
6. Comparing PAR-level and exchange cart systems. Time and distance factors were used to compute labor costs, and capital acquisitions were compared. Cost was one factor in the decision matrix, which included many noneconomic factors.
7. Developing a plan for implementation of a centralized materiel management system in conjunction with the Logistics Division, the Comptroller, and the Nursing Department.
  - a. Through Logistics expertise and evaluation by systems already in use, the necessary renovations to make Building 4516 an adequate MDS site were determined.
  - b. Through identifying all tasks involved in operation of the MDS, use time, and distance factors, staffing for initial operation was determined.

- c. Based on stockage levels and volume of supplies, throughput in the MDS and the user areas to establish equipment needs to store and transport inventories was identified.
  - d. Based on consultation with Nursing and Logistics, initial areas to be serviced and phase-in for additional areas were established.
  - e. By identifying usage histories and adapting figures based on Nursing input, stockage levels were established.
8. Writing a proposed standing operating procedure for the materiel distribution system utilizing all decisions made during analysis and selecting a centralized materiel management system in conjunction with working documents at similar facilities.

#### Endnotes

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<sup>2</sup>William K. Henning, "The Financial Impact of Materials Management," Hospital Financial Management 10 (February 1980): 40.

<sup>3</sup>Charles E. Housley, Hospital Materiel Management (Germantown, Md.: Aspen Systems Corporation, 1978), p. 4.

<sup>4</sup>Wilbur J. Balderson, "Improving Hospital Logistics Support," Army Logistician, July-August 1976, p. 18.

<sup>5</sup>Ibid., p. 19.

<sup>6</sup>Housley, Hospital Materiel Management, p. 38.

<sup>7</sup>U.S., Department of the Army, Office of the Surgeon General, Medical Logistics Policies and Procedures, with Health Services Command Supplement, dated January 15, 1986 (Washington, D.C.: Department of the Army, April 30, 1986), secs. 8-1 through 8-5.

<sup>8</sup>Jamie C. Kowalski, "Supply Distribution Options--A New Perspective," Hospital Materiel Management Quarterly 2 (Winter 1980): 82.

<sup>9</sup>Edward D. Sanderson, Hospital Purchasing and Inventory Management (Rockville, Md.: Aspen Systems Corporation, 1982), p. 212.

<sup>10</sup>Housley, Hospital Materiel Management, p. 1.

<sup>11</sup>Steven P. Gray, "Exchange Cart Vs. PAR Stock: Which Is the Best Distribution System?" Part I, Hospital Purchasing Management 7 (November 1982): 11.

<sup>12</sup>Ft. Leonard Wood Army Community Hospital, Logistics Division, Materiel Branch, "The Cart Distribution System," an information paper, Ft. Leonard Wood, Missouri, October 23, 1978, p. 2.

<sup>13</sup>Housley, Hospital Materiel Management, p. 1.

<sup>14</sup>Kowalski, "Supply Distribution Options," p. 82.

<sup>15</sup>Henning, p. 36.

<sup>16</sup>Michael J. Brzezicki, "But My Hospital Is Too Old," Hospital Materiel Management Quarterly 2 (Winter 1980): 38.

<sup>17</sup>Henning, p. 36.

<sup>18</sup>Ibid.

<sup>19</sup>Housley, Hospital Materiel Management, p. 163.

<sup>20</sup>Kowalski, "Supply Distribution Options," p. 83.

<sup>21</sup>Richard J. Tersine, Principles of Inventory and Materials Management, 2nd ed. (New York: North-Holland, 1982), p. 14.

<sup>22</sup>Charles E. Housley, "Distributing the Goods the Right Way," Hospitals 51 (16 June 1977): 105.

<sup>23</sup>Ibid.

<sup>24</sup>Gray, "Exchange Cart Vs. PAR Stock," Part I, p. 14.

<sup>25</sup>Kowalski, "Supply Distribution Options," p. 84; Bruce L. Tilley, "Exchange Cart System Favored for Supply Distribution," Hospitals 55 (16 March 1981): 113.

<sup>26</sup>Steven P. Gray, "Exchange Cart Vs. PAR Stock: Which Is the Best Distribution System?" Part III, Hospital Purchasing Management 8 (March 1983): 13.

<sup>27</sup>Kowalski, "Supply Distribution Options," p. 85.

<sup>28</sup>Tilley, p. 116.



- <sup>29</sup> Deborah L. Weireter, "Implementation of the Materiel Management Concept," Hospital Materiel Management Quarterly 6 (Fall 1984): 45.
- <sup>30</sup> Jamie C. Kowalski, "Comprehensive Materials Management," Hospital Progress 58 (March 1977): 81.
- <sup>31</sup> Ibid., p. 78.
- <sup>32</sup> Daniel R. Dundon, "A Cost-Effective Automated Materiel Distribution System," Hospital Materiel Management Quarterly 2 (Fall 1980): 9-10.
- <sup>33</sup> Henning, p. 41.
- <sup>34</sup> Housley, Hospital Materiel Management, p. 121.
- <sup>35</sup> Housley, "Distributing the Goods the Right Way," p. 105.
- <sup>36</sup> Sanderson, p. 219.
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- <sup>41</sup> Kowalski, "Supply Distribution Options," p. 82.
- <sup>42</sup> Brzezicki, p. 38.
- <sup>43</sup> Housley, "Distributing the Goods the Right Way," p. 105.
- <sup>44</sup> Gray, "Exchange Cart Vs. PAR Stock," Part I, pp. 11-14, Part II, pp. 15-17, Part III, pp. 10-14; Steven P. Gray, "Exchange Cart Vs. PAR Stock: Which Is the Best Distribution System?" Part IV, Hospital Purchasing Management 8 (May 1983): 5-8.
- <sup>45</sup> Dundon, p. 11.
- <sup>46</sup> Kowalski, "Supply Distribution Options," pp. 92-93.

<sup>47</sup>Ferrier, p. 79.

<sup>48</sup>Richardson, pp. 16-17.

<sup>49</sup>Brzezicki, p. 38.

<sup>50</sup>Ibid., p. 44.

<sup>51</sup>Beahm, p. 53.

<sup>52</sup>Peggy Ryan, "How to Implement Case Cart Systems for Central Service and Operating Room Use," Hospital Topics 56 (November-December 1978): 8.

<sup>53</sup>Brzezicki, p. 45.

<sup>54</sup>Tilley, p. 111.

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## CHAPTER II

### ANALYSIS

#### Present System

The Logistics Division of the Fort Sill MEDDAC functions under a decentralized form of materiel management. This division utilizes a variation of the requisition and delivery system to perform the primary function of distribution. The MEDDAC does not have a materiel distribution center. All supplies are issued in bulk from the medical supply warehouse.

Under the present system, outlined in Chapter 2 of Fort Sill MEDDAC Memorandum 40-61, Logistics Policies and Procedures, dated October 1, 1984, nursing personnel in each area must determine the quantity and the type of supplies to be maintained. Supplies on hand must be inventoried on a periodic basis and requisitions submitted to the Medical Materiel Branch to receive additional supplies. Standard stocked items are requisitioned on a prepunched DA Form 2765, which requires only the quantity, the date, and the signature to be entered. Standard items which are not stocked require a DA Form 2765-1, Supply Request. Nonstandard items must be requested on a DA Form 3953, which is a more involved process and may require extensive research on the part of the nursing staff. Supplies are delivered to the using activity by the Medical Materiel Branch warehousemen, usually with a one-day turnaround time. The nursing staff are responsible for receiving these

items, annotating receipt, and providing proper disposition of the supplies.

Items are issued in bulk, which is normally sufficient quantity to supply a patient care area for four to six weeks. This stockage level is far in excess of the two-week stockage level recommended by MEDDAC Memorandum 40-61. Bulk issues and nursing personnel's inability to devote sufficient attention to materiel management result in sporadic requisitions that do not support establishment of accurate request histories, which are necessary to determine which items the Medical Materiel Branch will stock in the warehouse for routine issue. As a result of this inability to forecast demand effectively, stockouts may occur more frequently. This phenomenon fosters hoarding on the part of the nursing staff in an effort to better provide the primary mission of patient care and allay the fear of stockouts in the future. Pilferage is also encouraged due to the excessive levels on hand. Each patient care area usually has at least two if not three to four storage areas. One area is utilized for storage of bulk items. The additional areas have duplicate supplies for daily usage and stockage for patient treatment areas.

This manner of providing consumable supplies does not provide adequate control of the supply dollars spent by each area. Although each area (cost center) is given a dollar target for each quarter, this target includes the purchase of all items with a dollar value below \$1,000, not just consumable medical/surgical supplies. If an area runs out of an item or funds to purchase that item, personnel are able to requisition consumable medical and surgical supplies from

Central Materiel Supply (CMS) on a routine basis. These requisitions are charged to CMS, not the user. This is a very poor management practice because the user is not responsible for supply usage. In addition, there is a wide array of items which are stocked and issued only as needed by CMS because of cost, sensitivity, or unit of issue. Because accountability for the supply target dollars is the responsibility of the user area, "checkbooks" must be maintained. This task requires extra training and is a time-consuming, ongoing endeavor.

Another area where the current system is lacking is standardization. The committee established for this purpose is nonfunctional in this arena of a myriad of different supply managers. As a result, costly, nonstandard items are routinely purchased in place of available standard items. Throughout the hospital, one can find a wide range of brands and types of items.

The numerous problems with the present system for providing consumable medical/surgical supplies have resulted in a great deal of dissatisfaction and discontent. Logistics personnel are eagerly working at establishment of a materiel distribution service utilizing either a PAR-level or an exchange cart system endowing the division with the authority and the responsibility to manage supplies. Nursing Service managers have the ongoing concern of staff shortages and wish to relieve patient care personnel of as many administrative type duties as possible. The Comptroller is seeking tighter controls on supply dollars and stricter accountability through the use of a centralized form of materiel management.

### Proposed System

Before the actual analysis can be conducted to select a centralized supply distribution system, two fundamental prerequisites must be fulfilled. Initially, requirements for the materiel distribution center must be identified. Then, the activities to be serviced and the various functions to be performed by the MDC must be determined. Once these requirements have been met, the actual selection of the system can be accomplished.

On-site visits to various facilities which have materiel distribution systems functioning can prove very useful in this preliminary process. For this study, approximately six MEDDACs were contacted telephonically for information and guidance. Additionally, a civilian hospital in Lawton, Oklahoma, AMI Southwestern Medical Center, was personally visited, and the MDS at Fort Leonard Wood, Missouri, was visited and evaluated by Logistics Division and by administrative and nursing personnel to obtain all perspectives of the system.

### Materiel Distribution Center

Most materiel distribution services locate the materiel distribution center within the main hospital facility. Hospital space is at a premium, however, and is very expensive. Several health care facilities have addressed off-site warehousing as an alternative to using hospital space and have been very successful with the concept.<sup>1</sup>

The Fort Sill MEDDAC has no space available within the hospital proper to allocate for the MDS. The Logistics Division has been authorized use of Building 4516, which is located 1,000 feet from the main

hospital (Reynolds Army Community Hospital) across Hartell Boulevard. The relationship of the two buildings can be seen in Appendix A. The building, however, requires renovation and remodeling to accommodate a materiel distribution service.

The doors of Building 4516 need to be enlarged to accommodate the carts. A ramp must be installed to allow a truck to back up to the doors and carts to be rolled directly from the truck into the building. A short driveway must also be built to allow the trucks access to the ramp from the street. A work order for these changes (Appendix B) has been submitted to the post engineer. Other building requirements include telephone support, which must be provided by Base Operations, and the possible need for a handicapped ramp to the side door for outpatients who are receiving supplies (a present function of CMS). A counter for issuing these supplies also needs to be constructed. A large expense not included in the initial work order is the fabrication of a wire cage and window covering for security of needles and syringes. Additional lighting will be needed to assist in visual location of items. Building 4516 is a very old World War II structure which is scheduled for demolition sometime in the future, and the post engineers are authorized to perform only certain levels of renovation to this classification of building. In addition, this building will be only a temporary home for the MDC, as Phase I of the new hospital includes a distribution center and is scheduled for completion in 1988. These factors must be taken into consideration when determining the extent of construction needed to adequately perform the mission of an MDS.

The installation of a ramp is necessary. One truck assigned to the Logistics Division does have a hydraulic lift, but it is utilized throughout the MEDDAC. It also has a tendency to break down. Carts could be pushed across the street, but the time involved would be extensive and the condition of carts and supplies following the trips would be questionable. Lifting individual carts is also a much slower process than just rolling carts from the building directly onto a truck.

Shelving needed for storage within the facility is also important. The initial suggestion was made to utilize prepositioned war stock food carts (Appendix C) for shelves. This suggestion was made to allow for quick implementation of the system and to save money. The carts could be utilized, but they were not made to hold medical supplies. The items could not be easily seen, and actually storing the many sizes and shapes would be extremely difficult. These carts take up a large amount of space, which is at a premium in this small building. Accommodating the total number of line items necessary in sufficient quantities would be extremely difficult if not impossible. Also, when Building 4516 was visited and inspected, the problem of unsanitary conditions (Appendix D) became evident. Even with a thorough cleaning of the MDC on a daily basis, the shelving in the MDC would have to be covered or protected in some manner to maintain the condition of the supplies. The expense of purchasing shelving specifically for storing supplies is actually not a problem, however. Construction funds for the new hospital facility (BLIC F) are available if the shelving system purchased is transferred into the Logistics Division of the new facility.



Shelving systems were looked at in conjunction with the evaluation of exchange cart systems. Both AMI Southwestern Medical Center and the MDS at Fort Leonard Wood utilize stainless steel wire rack shelving. The benefits of this type of shelving for static storage of bulk supplies are that it can easily be wiped off and kept clean and wire racks allow a great deal of light to reach each shelf level, increasing visibility and allowing for ease of identification and selection of items for restocking. Because this type of shelving is open and metal, light is reflected, which allows for a brighter and more pleasant environment in which to operate. The shelving used in various systems has castors or is stationary. From the comments which were made, castors appear to allow for greater flexibility and adaption within a work area.

Wire shelving from American Pharmaseal was recommended for the system. This shelving is stainless steel wire rack with castors. Most important, this company offers the additional feature of ACTIVE-AISLE, which is space-saving shelving that moves in tracks. This system would provide for the best and most efficient use of the available space in the MDC. The ACTIVE-AISLE track can be utilized in the new facility, or, if ample space is available, the shelving could be utilized without the track with the purchase of new castors. This company has provided shelving for several military hospitals, including the Fort Sill MEDDAC, with very satisfactory results. Pharmaseal also has an excellent history of providing support and maintenance and deals extensively with health care facilities. Covers for this shelving are available as well.

Once the selection of shelving was made, the company was contacted. The expertise of its representatives was solicited to best utilize the space available in the MDC. The Pharmaseal representative, in conjunction with the Administrative Resident, the Chief of CMS, and the Logistics Division NCOIC, completed the recommended design for the MDC (Appendix E).

The costs for establishing the MDC are summarized in Table 1 below. These costs are approximate, and they are not relevant to the comparison of a PAR-level and an exchange cart system, as an MDC is required for implementation of a centralized materiel management system.

TABLE 1

## COST TO ESTABLISH MATERIEL DISTRIBUTION CENTER

Item	Cost
Ramps, Doors, & Driveway	\$14,000
Wire Cage, Window Covering, Counter, & Lighting	3,000
Telephone Installation	0 <sup>a</sup>
Wire Shelving/ACTIVE-AISLE System	20,843
TOTAL	\$37,843

<sup>a</sup>Base Operations Support.

Activities Serviced

In planning for the services to be included in the initial materiel distribution system, the initial step was to identify all of the present activities provided consumer medical and surgical supplies

by the Materiel Branch and Central Materiel Supply. These activities are listed by name and cost-accounting code in Appendix F. The areas most in need of centralized materiel management are the inpatient wards. These activities must place all of their energies into the task of patient care. Their workload is crucial to the MEDDAC budget, which is allocated based on medical care composite units. Nursing is continually critically short of staff. Therefore, with all of the efforts devoted to patient care, very little time is spent managing supplies. As a result, these areas are considerably overstocked and excessive space is being used to store these supplies. The eight inpatient areas are listed in Table 2, along with bed capacities and floor locations.

TABLE 2

## INPATIENT AREAS OF REYNOLDS ARMY COMMUNITY HOSPITAL

Beds	Patient Care Area	Floor
12	Medical Intensive Care/Cardiac Care Unit	5
34	5 West--Medical	5
23	5 East--Pediatric	5
42	4 West--Orthopedics	4
40	3 West--General Surgical	3
30	3 East--Obstetrics	3
27	3 East--Newborn Nursery	3
6/6	Surgical Intensive Care Unit/ Recovery Room	2

In conjunction with the inpatient areas, CMS also must be included in the initial implementation. Holding cost centers accountable

for supply usage is imperative to this program. All activities must be provided consumable medical and surgical supplies solely through the MDC. CMS cannot be available as an alternative to correct materiel management inadequacies. When CMS is placed on a centralized materiel distribution system, it will no longer stock levels of supplies that will allow other services to receive supplies from its inventory.

The last area to be included in the initial implementation of the MDS is emergency services. These services encompass the minor care area (MCA), the emergency room (ER), and the ambulance section. The present system is almost totally ineffective. Supplies for all these areas are maintained in the same room, and, because space is so limited, additional areas in small closets and patient restrooms are utilized to store the balance of the supplies. Emergency services would be one of the last areas implemented initially and would be an excellent test ground for the remainder of the outpatient clinics. A successful centralized materiel management system instituted in emergency services would alleviate a tremendous administrative burden for the staff. The ER and the MCA are two of the busiest areas in the hospital, and the patient care providers should be concentrating their efforts on furnishing quality care to as many beneficiaries as possible.

#### Services Provided

In addition to providing consumable medical and surgical supplies to the inpatient wards, CMS, and the ER, the MDS will also assume several other functions now performed by CMS. Once CMS is relieved of these burdens, the service will become a central sterile supply activity.

Presently, CMS provides consumable supplies to outpatients on a prescription basis. These supplies can easily be provided to outpatients through the MDC. The task of handing out such items as gauze sponges and insulin syringes does not require a trained operating room technician. As described earlier, CMS provides many items on an as-needed basis to the inpatient areas. These items are not routinely stocked by the wards because it is not cost effective to issue them in bulk or they are considered sensitive due to cost, pilferageability, or minimal usage and require stricter control. This requirement can be transferred from CMS to the MDC. The distribution center is able to break down all bulk items and issue only needed quantities to the wards on a routine basis. Items which are used only by specific patients can be requisitioned on an as-needed basis from the MDS.

The one other function which the MDS will assume is that of stockage of intravenous (IV) solutions. The inpatient pharmacy presently stocks and controls usage of IV solutions. This duty has severely limited the work and storage capabilities of the pharmacy. Adequate control can easily be provided for these solutions through the MDS, and the stockage levels can be easily incorporated with the other consumable supplies. Climatic conditions in the MDS are adequate to maintain these solutions. This action would relieve the inpatient pharmacy, which is also short staffed, of this responsibility.

#### Hours of Operation

In developing an MDC, the hours of operation are critical to several other decisions. The original proposal was to operate eight

hours a day, five days a week, and exchange the carts only twice a week, maintaining a four- to seven-day inventory on each cart. The literature, however, recommends a twenty-four-hour-a-day, seven-day-a-week operation with carts exchanged daily, based on optimal size of the carts and maximum inventory turnover.<sup>2</sup> In practice, most of the MEDDAC personnel contacted stated that, when their MDS was first implemented, a twenty-four-hour, seven-day-a-week operation was established but that, once the system was accepted and running smoothly, it was possible to reduce the operation from twenty-four hours to ten to twelve hours a day. A seven-day operation was continued, however.

In terms of patient care providers, a seven-day-a-week operation would be more readily accepted and the system's ability to provide the needed supplies would be perceived as being a great deal more creditable. It is felt that initially the MDC at the Fort Sill MEDDAC should be operational from 7:30 a.m. to 6:00 p.m. seven days a week with carts being exchanged on a daily basis. The fear that these hours will consume too much labor is unfounded based on the labor analysis on the two systems (see Appendix G). This proposal has gained a much wider acceptance with nursing staff than the original proposal and will be acceptable as long as a mechanism is in place to accommodate emergency requests when the MDC is closed. This policy acceptance by the users is necessary as nursing support is essential to the success of the program.

### Selection of a System

Once requirements for the materiel distribution center have been established and the activities to be serviced and the various functions to be performed in the MDC are determined, the analysis of the alternatives can be accomplished. This analysis must evaluate both economic and noneconomic costs and benefits of the two systems.

The economic analysis, as described by Gray in his comprehensive four-part series, includes describing the operational environment, the supply volume, and the throughput and then comparing the PAR-level and the exchange cart system based on labor costs.<sup>3</sup> This is done with a time-distance study. When labor costs are established, life-cycle costing is used if necessary to incorporate capital equipment costs and maintenance costs. Once the economic costs are analyzed, the non-economic, environmental benefits must be weighed. Kowalski describes the environmental benefits as (1) ability to supervise employees, (2) location of management responsibility and authority, (3) ease of traffic, and (4) saving of space.<sup>4</sup> Once all costs and benefits have been analyzed, then selection of a centralized materiel management system can be made.

### Exchange Cart Selection

To implement a centralized materiel management program requires analysis and selection of a specific system. The two alternatives available are (1) the PAR-level system and (2) the exchange cart system. There are a variety of exchange cart systems available, and one had to be selected to allow for a comparison with the PAR-level stockage system.

Information was solicited from seventeen companies (see Appendix H). Replies with pertinent information were received from nine companies. Each exchange cart system was evaluated against specific criteria, and an exchange cart system was selected for comparison with the PAR-level system.

Criteria for selection (see Appendix I) were based on information found in the literature and the experience of personnel at AMI Southwestern Medical Center and Fort Leonard Wood MEDDAC. Comments were also gathered from Logistics Division and Nursing Service staff as to what features were important to them. Other factors which were important were: The carts will have to be transported in a truck from the MDC to the main hospital; therefore, the carts will have to be durable and easy to clean and have covers. The carts will have to be as large as possible without being unwieldy. Mobility and ability to clean in either a mechanical or a manual mode will also be important factors. The MDC in Building 4516 will require manual cleaning of the carts, but the new facility will include an automatic cart washer. The system will utilize new hospital construction funds (BLIC F); therefore, the expected life and the durability of the equipment will be important. This system must be utilized now and for a long time in the future in the new facility. Replacement funds will not be readily available during Phase II or shortly thereafter. Funds are available now and should be used to purchase a system that will have an extended life.

Nursing personnel recommended carts which have four swivel castors and the ability to lock two wheels. This will facilitate



transportation of the carts and afford greater control of movement, preventing damage to the carts or the hospital facility. The comparison of the exchange cart systems is presented in Appendix I. Cost was not an overriding factor, as decisions were largely subjective based on all personnel that would be affected. The exchange cart marketed by American Pharmaseal Corporation is recommended for selection and is shown in Appendix J.

### Economic Evaluation

As described by Gray, the two primary costs of a cart exchange system or a PAR-level stockage system other than the MDS (which will remain the same for either system) are (1) capital equipment acquisition and (2) labor costs. The capital costs for an exchange cart system are always higher than those for the PAR-level system.<sup>5</sup> The PAR-level system requires the purchase of only a minimal number of transfer carts and uses existing storage shelves, cabinets, and lockers in the patient care areas. An exchange cart system, on the other hand, requires two sets of carts to be purchased for all user activities being serviced by the MDS. Thus, the cost which should be evaluated initially is the labor cost.

The labor cost is evaluated utilizing time and distance factor studies to determine how much labor is needed to perform the functions step by step. To enable this study to be completed, several things must occur: First, the environment in which the system will be operating must be described. Then, the supply throughput must be estimated to determine the number of transfer carts or exchange carts needed. At

this point, the tasks required to perform each system must be delineated, distance and time requirements established, and labor factors applied to determine how many full-time employees (FTEs) will be needed to perform the tasks.

At this point, the PAR-level and the exchange cart system can be compared based on labor and capital equipment requirements. The resource requirements for the two systems if implemented at the Fort Sill MEDDAC are summarized in Table 3. The supporting calculations are shown in Appendix G.

TABLE 3  
COMPARISON OF RESOURCE REQUIREMENTS FOR PAR-LEVEL  
AND EXCHANGE CART SYSTEM

System	Number of FTEs	Capital Equipment
PAR-Level	4.20	6
Exchange Cart	5.13	36

FTE = Full-time employee.

Most of the literature touts PAR-level systems as being more labor-intensive than cart exchange systems. In fact, Gray states:

Recent studies performed by Chi Systems, Inc. of Ann Arbor, Michigan, have indicated that in many cases, the comparison favors the PAR stock system. In fact, Chi Systems, Inc. has yet to find an analysis conducted in the manner discussed here which favors the exchange cart system. This does not mean that such a situation will never exist, because theoretical models have been established which favor the exchange cart system.<sup>6</sup>

It can be seen from Table 3 that the labor requirements for the PAR-level system are less than those for the cart exchange system for

initial implementation at Fort Sill.

Gray states that:

the capital costs of the exchange cart system are always higher than those associated with the PAR stock system. The exchange cart system requires more carts and thus more space--both representing high capital expenditures. Consequently, when labor costs associated with the two systems are equal, the PAR stock system should be selected.<sup>7</sup>

If the labor cost analysis had favored the exchange cart system, the next step would have been to conduct life-cycle costing. Gray defines life-cycle cost analysis as a "financial technique used for evaluating two investment decisions that have different operating or annual costs, and different capital costs."<sup>8</sup> Gray gives two rules to determine when a life-cycle cost analysis is necessary:

1. If labor costs are equal for both systems, or less for the PAR stock system, always select the PAR system.
2. If the labor cost for the exchange cart system is less than that for the PAR stock system, a life-cycle cost analysis must be performed to make the selection.<sup>9</sup>

Dundon describes life-cycle costing as "an excellent tool for evaluating the economic impact of projects, which involve high initial costs, significantly reduced operating expenses, and relatively long productive lives." This type of analysis requires that "the annual cash flows of an alternative must be converted to a common dollar value at a given time, because time gives costs in different years dissimilar values. Money is given 'time value' in the form of a discount rate, which is the opportunity cost of capital."<sup>10</sup> This net present value concept is used to determine life-cycle cost of each alternative and allows alternatives to be compared.

Gray's analysis addresses the three economic costs of

implementing a centralized materiel management system: (1) labor, (2) capital equipment acquisition, and (3) annual operating (maintenance) costs. As can be seen from the analysis for implementing a system at the Fort Sill MEDDAC, life-cycle costing is not necessary. The labor and the capital equipment requirements for the PAR-level system are both less than those for the exchange cart system. Based solely on economic criteria, the PAR-level stock system should be selected.

#### Environmental Benefits

In addition to the economic criteria for selection of a centralized materiel management system, there are other aspects, to which Kowalski refers as environmental benefits, which must be addressed:

Before any final decisions are made, environmental factors should be considered. These are the factors over and above dollars and cents that will help hospitals decide which is the best system for them. Consider the ability to supervise employees who are providing the service and performing the distribution function, where the management responsibility and authority for the inventory management and supply distribution function should reside, the traffic required in the routes that must be followed, and the space for storage, working, and parking. Some of these environmental factors could cause a hospital to select one alternative over another, especially when the direct costs are extremely close, which they could be, given the conditions and situations in the hospital.<sup>11</sup>

The nondollar or environmental benefits which must be specifically addressed are the management aspects and the benefits perceived or real to the user, which is the nursing staff. From the management perspective, the degree of control and minimization of lost time and errors are important aspects of the system selected. With the PAR-level system, the bulk of the work will be conducted in the user's area under little or no logistical supervision. With the cart exchange

system, the two critical functions of inventorying and restocking are performed under direct supervision in the MDC. This should result in more effective time utilization and a lower error rate. With an exchange cart system, there is also instantaneous replenishment of depleted stock to a full stockage level; thus, there is no concern about gaps or lags between inventory and restocking. This responsiveness is important due to the dynamic nature of a patient care area. Additionally, with an exchange cart system, primary functions are conducted away from the user areas, minimizing disruption of nursing activities. This minimization of disruption is important to the user.

Acceptance by the nursing staff is essential to the success of any centralized materiel management system. If the users have no confidence in a system, they will circumvent or subvert it. Tilley reports that nursing staffs have expressed greater acceptance of the exchange cart system.<sup>12</sup> The nursing staff at Reynolds Army Community Hospital with whom this project was discussed were overwhelmingly in favor of the exchange cart system over the PAR-level system. Presently, space is being wasted and misutilized in storing bulk supplies and other supplies in various locations in the ward areas. An exchange cart system employs more controlled distribution than a PAR-level system, as inventory can still be lost with the PAR-level stock system's use of multiple storage locations and various shelving units, closets, drawers, and cabinets.<sup>13</sup>

These two systems as assessed by Kowalski are compared to the present Fort Sill MEDDAC requisition and delivery system in Table 4. The evaluation at Fort Sill does not necessarily agree with Kowalski's

TABLE 4  
SUMMARY OF COMPARISONS OF OPTIONS

Distribution System	Total Hospital Inventory Reduction Potential	Labor Utilization	Capital Expense	Space Utilization	Management Control
PAR-Level	High (as high as 50% over requisition system)	Fair	Low	Good	Very good
Exchange Cart	High (as high as 50% over requisition system)	Excellent	High	Good	Excellent
Requisition	Low	Poor	Low	Poor	Poor

SOURCE: Jamie C. Kowalski, "Supply Distribution Options--A New Perspective," Hospital Materiel Management Quarterly 2 (Winter 1980): 86.

findings. Either recommended system would be an improvement over the requisition system presently in place. The PAR-level system would be less labor intensive and have a lower capital expense than the exchange cart system. The management control element of the PAR-level system would be only fair due to the off-site location of the MDC. Space utilization would be improved because bulk issue would no longer be a concern, but the existing storage equipment is not truly compatible with a centralized materiel management system. Labor utilization for the exchange cart system is higher than for the PAR-level system (5.13 to 4.20) and capital expense is much higher (36 carts to 6 carts). The exchange cart system, however, does provide an excellent method of management control and is readily acceptable to the user, the nursing staff. The space utilization is very good, as storage for the carts is the only space needed. Use of only the carts for storage of consumable medical and surgical supplies would also greatly increase accountability and control over usage of the supplies.

One of the biggest advantages to selecting an exchange cart system over the PAR-level stockage system is that the new hospital facility is planned around an exchange cart system. The hope is to convert the entire MEDDAC to some form of centralized materiel management prior to occupancy of the new facility. It makes sense to convert only once to a new system rather than adjust to a PAR-level stock system and then, amid the turmoil of moving into a new facility, convert the PAR-level to an exchange cart system. Capital resources used to purchase the exchange cart system will come from new hospital construction funds (BLIC F). The system will then be expanded when occupancy

of the new facility is completed. Those funds can be utilized now or they will be expended later to purchase the exchange cart system for the new facility.

The recommendation would be to select the exchange cart system for implementation at the Fort Sill MEDDAC. The difference in labor costs is within one full-time employee. The capital acquisition costs are much greater for the exchange cart system, but these will be absorbed by the new hospital facility construction funds. The noneconomic benefits of responsiveness and acceptance by the nursing staff in conjunction with the better management control and space utilization outweigh the economic differences.

#### Endnotes

<sup>1</sup>Daniel J. Dryan, "Off-Site Warehousing," Journal of Healthcare Materiel Management 3 (November-December 1985): 45.

<sup>2</sup>Steven P. Gray, "Exchange Cart Vs. PAR Stock: Which Is the Best Distribution System?" Part I, Hospital Purchasing Management 7 (November 1982): 13.

<sup>3</sup>Ibid., pp. 11-14; Part II, Hospital Purchasing Management 8 (January 1983): 15-17; Part III, Hospital Purchasing Management 8 (March 1983): 10-14; Part IV, Hospital Purchasing Management 8 (May 1983): 5-8.

<sup>4</sup>Jamie C. Kowalski, "Supply Distribution Options--A new Perspective," Hospital Materiel Management Quarterly 2 (Winter 1980): 93.

<sup>5</sup>Gray, Part IV, p. 5.

<sup>6</sup>Gray, Part II, p. 13.

<sup>7</sup>Gray, Part IV, pp. 5-6.

<sup>8</sup>Ibid., p. 5.

<sup>9</sup>Ibid., p. 7.



<sup>10</sup>Daniel R. Dundon, "A Cost-Effective Automated Materiel Distribution System," Hospital Materiel Management Quarterly 2 (Fall 1980): 3.

<sup>11</sup>Charles E. Housley, "Materiel Management Q's and A's: Total Supply Cart Exchange System," Hospital Topics 57 (March-April 1979): 40.

<sup>12</sup>Bruce L. Tilley, "Exchange Cart System Favored for Supply Distribution," Hospitals 55 (16 March 1981): 116.

<sup>13</sup>Gray, Part I, p. 11.

## CHAPTER III

### CONCLUSION

#### Implementation Plan and Recommendations

##### Initial Setup

The Fort Sill MEDDAC staff is dissatisfied with the current method of providing consumable medical and surgical supplies. It is felt that a form of centralized materiel management could resolve many of the problems and concerns of the present system. The two alternatives which are feasible are (1) the PAR-level stockage system and (2) the exchange cart system. One is not necessarily better than the other, and a systematic evaluation of the two systems in relation to the operational environment at the U.S. Army MEDDAC, Fort Sill, Oklahoma, has resulted in the selection of the system which should be most effective and most beneficial. This systematic approach had wide application and addressed the concerns of all personnel involved and affected by implementation of a materiel distribution system. Input was solicited from the Department of Nursing, the Logistics Division, the Comptroller Division, and the administration, to include the Health Facility Project Officer.

Implementation will include equipment requisitions, establishment of stockage levels for each using activity, stock requirements for the MDC, actual setting up of the MDC, creation of forms for procuring and issuing supplies, and formulation of standing operating

procedures for operation of the MDC. A critical element of implementation will be the staffing. The personnel must come from in-house from current MEDDAC resources.

After logical evaluation of the PAR-level stockage and the exchange cart system, the recommendation is made to establish an MDC in Building 4516 using the ACTIVE-AISLE system purchased from American Pharmaseal and to establish an exchange cart system using carts also purchased from Pharmaseal. The areas to be serviced and the number of carts to be utilized for the initial system are depicted in Table 5. Once initial implementation is completed, then the following groups of activities can be incorporated:

1. Group I--In-house Clinics

- a. Reynolds Family Practice Clinic
- b. Obstetrics/Gynecology
- c. Orthopedics
- d. Podiatry
- e. Physical Therpay
- f. Urology
- g. Surgical
- h. Internal Medicine
- i. Dermatology
- j. Pediatrics

2. Group II--In-house Clinics

- a. Pathology
- b. Radiology
- c. Pharmacy

TABLE 5  
NUMBER AND SIZE OF REQUIRED CARTS FOR PROPOSED  
SYSTEM BY AREA AND FLOOR

Area	Floor	Number & Size of Carts
MICU/CCU	5	1 X-Large
5 West	5	2 X-Large
5 East	5	1 X-Large
4 West	4	2 X-Large
3 West	3	2 X-Large
3 East	3	2 X-Large
Newborn Nursery	3	1 X-Large
SICU/RR	2	1 X-Large
CMS	2	2 X-Large
Emergency Services <sup>a</sup>	1	4 X-Large
Subtotal		18 X-Large x2
TOTAL		36 X-Large

<sup>a</sup>Trauma room, minor care area, emergency room, and ambulance service.

MICU--Medical intensive care unit  
CCU--Critical care unit  
SICU--Surgical intensive care unit  
RR--Recovery room  
CMS--Central Materiel Supply

- d. Ophthalmology
- e. Optometry
- f. Ear, Nose, and Throat
- g. Respiratory Therapy
- h. Nutrition Care
- i. Physical Therapy, Fourth Floor

j. Immunizations/Allergy

3. Group II--External Clinics

- a. Troop Medical Clinic No. 1
- b. Troop Medical Clinic No. 2
- c. Craig Road Family Practice Clinic
- d. Kohler Loop Family Practice Clinic
- e. Harrison Family Practice Clinic/Aviation Medicine
- f. Troop Medical Clinic No. 6
- g. Physical Exam
- h. One Station Training
- i. One Station Training--Optometry
- j. Optometry

4. Dental Activity

- a. Headquarters
- b. Cowen Dental Clinic
- c. Allen Dental Clinic
- d. Weeks Dental Clinic
- e. Dental Clinic No. 2

The recommendation is made to order the same size carts for all areas so that they are interchangeable. This would greatly simplify the exchange of the carts for the workers. The carts should be ordered with all-alike equipment to facilitate standardization of the configuration of the supplies on the carts. The initial covers would be ordered with eighteen in one color and eighteen in another color in order to easily identify the depleted carts vis-a-vis the restocked carts. A list of all needed equipment to be ordered is presented in Appendix K.

The MDC, in addition to servicing the inpatient wards with cart exchange, will also have to fill emergency requisitions and one-time requests for items stocked in the MDC but not on the carts. Area staff must be able to telephone the MDC for an item, and staff from the MDC should fill out the appropriate charge form, pull the item, and deliver the item to the area. Nursing staff must not be responsible for going to the MDC to pick up items or the entire purpose behind the exchange cart system will be defeated. Nursing staff will sign for an item, and the charge form will serve for accountability purposes for the supply clerks to charge that activity. CMS has served this function for emergencies, etc., when wards have not been able to keep stock on hand for any number of reasons. CMS will cease to function in this capacity.

Currently, CMS is filling any prescriptions for consumable medical and surgical supplies written for outpatients by patient care providers. The MDC should assume this responsibility. Under the present system, CMS is absorbing all of the costs of these supplies. When the MDC is in place, outpatient prescriptions will be charged to the prescribing providers' activity. If a patient is being discharged from a ward, that ward will be charged. If the patient is seen in a clinic on an outpatient basis, then that clinic's Q account will be charged.

The most crucial phase of implementation will be the planning. Nursing personnel's involvement in this phase will be key to the success of the implementation of the exchange cart system. Nursing input is especially essential in establishing stockage levels. The nursing

staff is the primary user of the supplies; nursing personnel know what they need. This system must allow the using activity to be responsible for the fundamental task of determining stockage levels. The next step will be to educate all users as to what the system is, what it does for them, and how it works. Inservice education and training will be essential.<sup>1</sup> One cannot emphasize enough the importance of proper planning in preparation for implementation of an exchange cart system. All affected personnel must be involved and the following subjects must be addressed: MDS operation, stockage, areas serviced, staffing, and ongoing evaluation.

#### Operation

The MDC will be operational seven days a week from 7:00 a.m. to 6:00 p.m. to provide routine stockage through cart exchange. The MDC will also issue supplies on a one-time issue basis as needed and fill emergency requisitions to indicated areas. Outpatient prescriptions will be filled at the MDC for consumable medical and surgical supplies. All other activities must utilize the requisition and delivery system presently in place to procure consumable medical and surgical supplies.

The MDC will be closed from 6:00 p.m. until 7:00 a.m. The education process will assist a great deal in teaching the evening shift to anticipate and order any required supplies prior to the closing of the MDC at 6:00 p.m. During down periods, if an emergency arises, which should be seldom once appropriate and realistic stockage levels are established, the first response of an activity should be to

borrow from another activity. If an item is not available through this procedure, then both the nurse supervisor and the Administrative Officer of the Day will have access to the MDC. An item can then be procured on a charge slip by either of these individuals. A member of the MDS needs to be on call for backup if assistance is needed. Other MEDDACs have experienced three to eight requests a month to procure items after normal MDC operating hours.<sup>2</sup>

Carts will be exchanged on a daily basis. This has been found to be the optimum frequency and one that results in the greatest inventory turnover, meets demands of patient turnover, and experiences the greatest acceptance from nursing staff, especially in inpatient areas.<sup>3</sup>

The MDC will be small and should maintain, at a maximum, two weeks' supply of inventory. Stock should be reordered on at least a weekly basis from the medical supply warehouse and more frequently if indicated by usage records. A proposed standing operating procedure for the materiel distribution system is presented in Appendix L.

### Stockage

Predetermined stockage levels of inventory on the carts are key to the success of the exchange cart system. To estimate the supply throughput and establish suggested baseline stockage levels for the patient care areas was an arduous task. Initially, the Materiel Management Branch requested that each serviced activity submit a list of all standard and nonstandard consumable supplies used in patient care and the usage levels. The replies were varied. The user activities did not include many items procured from CMS or by other means.



The usage rates were for bulk issues and were not for a standard time frame.

Once the implementation of a centralized materiel management system was identified as the graduate research project, a plan was formulated to actually identify demand histories. The proposal (see Appendix M) was to inventory actual on-hand stockage on a weekly basis for one month each on three wards and to reconcile these amounts with issues from CMS and the medical supply warehouse. The inventories were so voluminous and the task so time-consuming that this plan became unfeasible and had to be abandoned. Inventory was actually conducted for five weeks, and this information was utilized to prepare a generic stockage list (see Appendix N) which was part of a request sent to nursing personnel for their comments and recommendations and to individualize the generic stockage list for their specific patient care area. This input, in conjunction with automated stockage lists from the MDS at U.S. Army MEDDAC, Fort Leonard Wood, Missouri, was used to formulate stockage lists for the ten areas involved in the initial implementation plan and to compute initial stockage for the MDS (see Appendix O). This required conversion from unit of measure to unit of issue. These stockage lists must be reviewed and adjusted again during the configuration of the carts to insure that they are as realistic as possible.

It is very important to address other than routine items for exchange carts which would be maintained in the MDC for as-needed demands. These are items which are used infrequently but which, when required, are needed immediately. Stockage of these types of items

on the carts would waste valuable space as well as cost dollars in inventory. When these items are needed, a charge slip will be filled out and MDC personnel will deliver the items to the activity. This is very important. Nursing personnel must not be required to go to the MDC to procure these as-needed items. The inclusion of IVs in the MDC must also be worked out with logistics and the pharmacy and IVs be included on the cart stockage lists.

In determining stockage levels, the recommendation from other MEDDACs is to stock whatever the nurses want initially and then reduce the levels to more realistic figures once usage histories are established. Once stockage lists for each area are determined, then a committee of Logistics and Nursing personnel, with the assistance of consultants, must be established to determine the configuration of the supplies on the carts to allow for maximum utilization of the space on the carts while at the same time standardizing locations as much as possible so that personnel can go to any cart and find most items. This must be flexible as more areas will, to some degree, have unique usage items. These levels must be reviewed and updated frequently in the initial phase and, once the system is operating smoothly, should be reviewed and adjusted quarterly. Nursing input in conjunction with actual usage rates extracted from MDC records should make this a fairly simple task.

Needles and syringes need to be handled differently. These items require a greater degree of security than can be presently provided on the carts. The carts can be easily modified to accommodate a clasp and padlock. Nursing personnel also have the option of removing

this drawer from the cart once it is delivered and storing the drawer in the medication room. The predetermined stockage levels will significantly decrease the quantity of needles and syringes presently stocked in inpatient areas. During the inventory history phase of the research, it was discovered that many areas had in excess of a two-month supply of needles and syringes.

#### Areas Serviced

The initial ten areas should be phased into operation. A test site should be used first. The recommendation would be to use 4 West and CMS as the first two areas to implement the exchange cart system. CMS must be first because the missions and the staffing authorizations are being assumed by the MDC. Four West has a highly trained and knowledgeable staff with an area already designated for storage immediately adjacent to the nurses' station. The ward patient population is fairly stable and usually not as critically ill as that of other units. Following a one-month test phase, additional areas can be added at one-week intervals until all ten areas are instituted on the exchange cart system. The recommended sequence of implementation is as follows:

1. Test site: 4 West and Central Materiel Supply
2. Week 1: 5 West
3. Week 2: 3 West
4. Week 3: 3 East
5. Week 4: Newborn Nursery
6. Week 5: 5 East

7. Week 6: Medical Intensive Care Unit and Critical Care Unit
8. Week 7: Surgical Intensive Care Unit and Recovery Room
9. Week 8: Emergency Room

To actually convert an area to the exchange cart system requires that the MDC be stocked and set up in advance. This will necessitate overtime or additional manpower. The day of initial implementation will require that the full carts be taken to the designated areas the morning of the test and that all the existing stock be pulled from all storage areas and turned in to the MDC.

#### Staffing

The analysis validated the need for 5.09 FTEs to restock and exchange carts. Common functions of any centralized form of material management were not addressed. These functions include receiving bulk supplies from the medical supply warehouse, breaking down those orders, and stocking the shelves in the MDC. Cleaning the MDC will be a daily function. Cleaning the carts will be required weekly or more frequently if needed. Thorough sanitation of all the carts will be required at least semiannually. Another routine function will be filling outpatient prescriptions for consumable medical and surgical supplies and filling emergency requisitions and requisitions for nonroutine items on an as-needed basis. Based on historical data from CMS, the MDC will average twenty outpatient prescriptions a day.

The prescriptions can be filled in less than five minutes each, to include the accompanying paperwork. Filling one-time requisitions and emergency requisitions will also consume time, which can only be

estimated. Additional man-hours will be required as indicated below:

1. Restocking MDC:  $12 \text{ hours/week} \times 4 \text{ weeks} = 48 \text{ hours} \div 145 = .33$  FTEs.
2. Cleaning MDC:  $1 \text{ hour/day} \times 30 \text{ days/month} = 30 \text{ hours} \div 145 = .21$  FTEs.
3. Cart sanitation:  $4 \text{ days twice/year} = 72 \text{ hours/year} = .04$  FTEs.
4. Filling on-call/emergency requests:  $6 \text{ hours/week} \times 4 \text{ weeks} = 24$  hours  $\div 145 = .17$  FTEs.
5. Filling outpatient prescriptions:  $5 \text{ minutes} \times 20 \text{ prescriptions} = 100 \text{ minutes/day} \times 5 \text{ days} \times 4 \text{ weeks} = 2,000 \text{ minutes} \div 60 = 33.33$  work hours  $\div 145 = .23$  FTEs.

These tasks total 1.19 FTEs, which, along with the requirements for cart restock and exchange, totals 6.32 FTEs for warehouse workers. The other staffing requirements are for a supervisor and accounting/supply clerks.

The implementation plan is limited, and one supervisor is all that will be required to manage the materiel distribution system. This supervisor will be responsible for the overall operation of the facility and the management of personnel and resources.

Recordkeeping is a key function. The MDS will commence operation with a manual system. The MEDDACs which were contacted have at least two supply accounting clerks if their systems are not automated. Their duties include maintaining adequate levels of supplies in the MDC by establishing reorder points and economic order quantities. These clerks must also maintain all accounting records to charge the user activities for supplies consumed and forward this information

to the Comptroller Division.

A recapitulation of the recommended staffing is shown in Table 6. Leaves, sick leaves, and other authorized absences have been considered using the Army Availability Factor of 145<sup>4</sup> in all of the labor calculations. The recommendation is to staff with an overlapping shift (7:00 a.m.-3:00 p.m.; 10:00 a.m.-6:00 p.m.) seven days a week for the warehousemen. Accounting activities need to be carried out on a daily basis, and one of the accounting clerks needs to be designated as an assistant supervisor who can then supervise warehousemen during weekend hours. One clerk can be scheduled Thursday through Monday; the other clerk can be scheduled Monday through Friday. The supervisor of the MDS would thus have a normal workweek.

TABLE 6  
RECOMMENDED STAFFING

Grade	Position	Number	Salary	Total Salary
GS-7	MDS Supervisor	1	\$22,220	\$ 22,220
GS-5	Accounting/Supply Clerk	2	17,941	35,882
WG-5	Warehouseman	6	16,390	98,340
TOTAL				\$156,442

Most MEDDACs have the MDS under the services branch or the materiel branch. The MDS should be considered a separate service that reports directly to the Chief of Logistics, as it is performing an extensive service vital to the supply system of the hospital. Army

Regulation 40-61 and Health Services Command Supplement to Army Regulation 40-61 do not address the structure of authority. If it is not addressed as a separate service, then it should be placed under the control of the Chief of the Materiel Branch, who handles the same type of supplies in his stock fund (see Figure 3).

A Schedule X (Appendix P) was submitted to Health Services Command in justification for staffing of an MDS to service all activities within the Fort Sill MEDDAC. This document was disapproved, as several germane questions as to tasks and duties were not answered comprehensively, and requires additional justification prior to resubmission.

#### Standardization

There is a proliferation of brand name, nonstandard consumable supplies in Reynolds Army Community Hospital. The present Materiel Standardization Committee has no ability to monitor or control ordering on nonstandard items. With implementation of an exchange cart system, all supply items stocked will be standard unless approved for exception by the Standardization Committee. This committee will be multidisciplinary and will function in the same type of capacity as the Therapeutic Agents Board does. Utilizing the Standardization Committee should greatly reduce the number of items stocked and the wide range and myriad brands of items now available. This action will reduce the cost of inventory.

#### Recordkeeping

Recordkeeping is a crucial element in any successful distribution

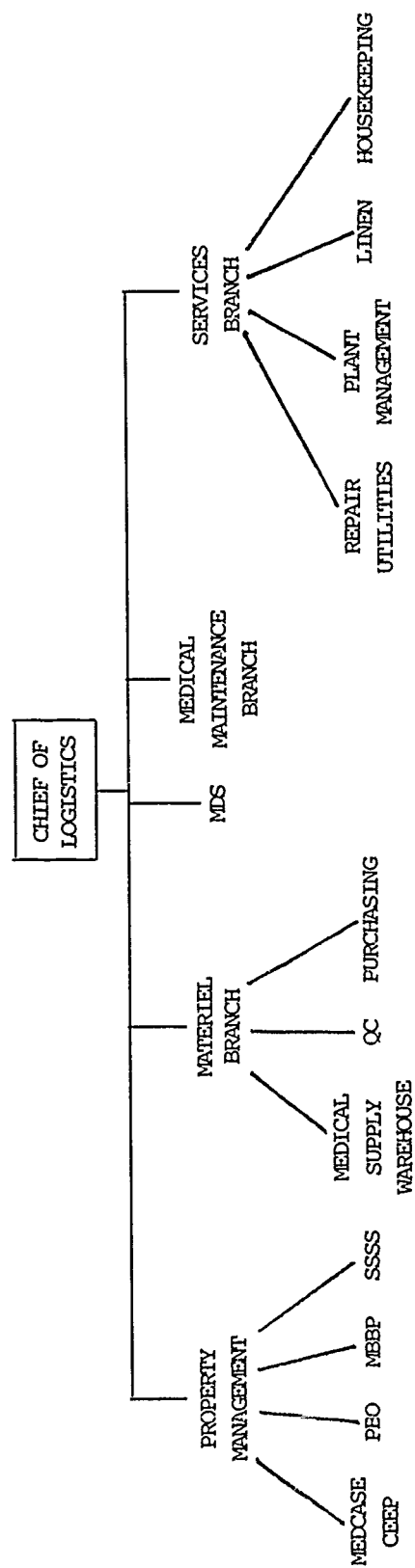


Fig. 3. Wire Diagram for Logistics Division



system. One of the goals of converting to a centralized materiel management system is greater control and accountability of where supplies are consumed. Demand, usage, and trends are important information for accurate forecasting. These data also enable the stockage levels to be adjusted appropriately when needed and assist personnel to establish what supplies, along with their cost, are being used by which activity. The recordkeeping system will be manual initially. The Fort Sill MEDDAC is scheduled to receive the central processing and distribution (CPD) module for the MEDSTOCK logistics system in 1988. The program will enable all MDS functions to be automated.

Many MEDDACs have already converted to other automated distribution programs in lieu of the CPD module. They are not entirely satisfied with the programs because such programs do not do as much as MEDDAC personnel would like. In addition, as in the case of Fort Leonard Wood, the mainframe computer is not operational during weekends. This requires changes in inventory procedures for the warehousemen during weekends and additional entering of data on Monday mornings.

Automated systems are expensive in terms of both acquisition cost and installation. They do provide valuable information very rapidly in an efficient manner. A manual system, while much more time-consuming, is far more flexible, and it is easier to change and improve methods of accounting using a manual system.

#### Financial Aspects

The Medical Materiel Branch's inventory is stock fund. Once inventory is issued to the materiel distribution system, it is purchased

with OMA funds and charged to the MDS cost center. As items are restocked on carts, the using activities will be charged for them. In actuality, a charge will be transferred from the MDS account to another cost center. The recommendation is to issue a quarterly target to the MDS and hold that activity responsible and accountable for servicing all of the inpatient areas for that time period.

Charges for each activity will be compiled on a daily basis by the accounting clerk in the MDC and forwarded to the Comptroller on a monthly basis. At this point, the Comptroller will transfer OMA budget expenditures from the MDS to each individual Q account. Theoretically, the MDS account should be zeroed out on an annual basis by charging all costs to individual user activities (cost centers). In actuality, due to price changes from the stock fund, pilferage, waste, and human error, this is not practicable.

The initial implementation will involve transferring of charges. As carts are delivered to areas for the first time, all existing stock will be pulled out. The stock which is removed from patient care areas will be inventoried and the ward Q accounts credited for the amount. The MDS account will be debited for the same amount. The stock can then be reissued from the MDC as carts are replenished and charged to the patient care areas. This procedure will eliminate double charging for supplies. In actuality, these OMA dollars are already spent, but accurate accounting of what cost centers actually consume supplies where and when is important.

### Conclusions

A centralized form of materiel management can be effective and efficient in providing consumable medical and surgical supplies to patient care activities within the Fort Sill MEDDAC. After a systematic evaluation of the options available, an exchange cart system was selected for phased implementation at Fort Sill.

Essential to the success of this system is the proactive involvement of key personnel in the Logistics Division and the Department of Nursing. Genuine and strong support from the administration (MEDDAC Commander, Deputy Commander for Administration, and Deputy Commander for Clinical Services) is also crucial. Extensive planning and education of the users of the system will alleviate many fears and dispel any doubts. Appropriate stockage levels determined through cooperation of the MDS and the involved patient care areas will instill confidence in the ability of the system to meet patient care needs.

An exchange cart system will enable the Logistics Division to manage inventories appropriately, with all the benefits concomitant with a centralized materiel management system. This system will free the limited nursing care personnel to the maximum extent possible to concentrate their efforts toward their primary mission of providing quality patient care.

### Endnotes

<sup>1</sup>Michael J. Brzezicki, "But My Hospital Is Too Old," Hospital Materiel Management Quarterly 2 (Winter 1980): 43.

<sup>2</sup>Telephonic interviews with: Mr. Mullins, Supervisor, Materiel Distribution System, Fort Hood Medical Department Activity, Fort Hood, Texas, April 18, 1986; Mrs. Praether, Supervisor, Materiel Distribution System, Fort Leonard Wood Medical Department Activity, Fort Leonard Wood, Missouri, April 18, 1986; and Mr. Ronaghan, Supervisor, Materiel Distribution System, Fort Polk Medical Department Activity, Fort Polk, Louisiana, April 18, 1986.

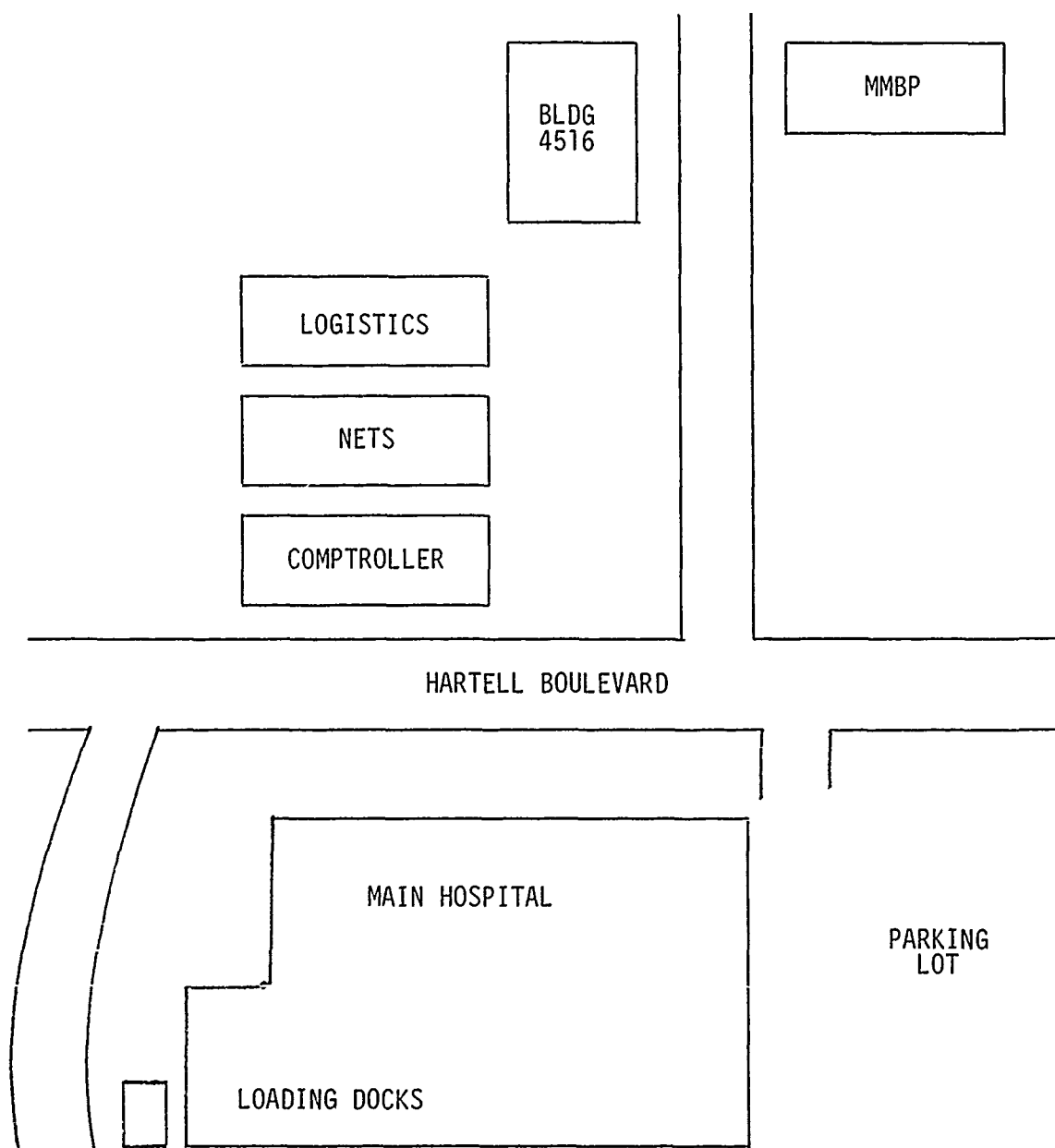
<sup>3</sup>Herbert D. Johnson, "Exchange Cart Information System: The Computer Connection," Hospital Materiel Management Quarterly 5 (Spring 1984): 8.

<sup>4</sup>Health Services Command, Letter, Subject: "Army Availability Factors (AAF)," dated April 14, 1986, p. 1.

APPENDIX A

MAP OF LOCATION OF BUILDING 4516 (PROPOSED  
MATERIEL DISTRIBUTION CENTER) IN RELATION  
TO REYNOLDS ARMY COMMUNITY HOSPITAL

MAP OF LOCATION OF BUILDING 4516 (PROPOSED  
MATERIEL DISTRIBUTION CENTER) IN RELATION  
TO REYNOLDS ARMY COMMUNITY HOSPITAL



APPENDIX B

COPY OF WORK ORDER FOR RENOVATION  
OF BUILDING 4516

[illegible]

FORWARD FOR APPROVAL									
TO	RECOMMENDED ACTION	ENVIRONMENTAL IMPACT		ESTIMATED COST		WORK TO BE PERFORMED		FROM	
		NO	YES	FUNDED		<input type="checkbox"/> IN-HOUSE	<input type="checkbox"/> SELF-HELP	FACILITIES ENGINEER	
APPROVING AUTHORITY	<input type="checkbox"/> APPROVAL	<input type="checkbox"/>	<input type="checkbox"/> ENVIRONMENTAL CONSIDERATIONS	WC	\$	<input type="checkbox"/>			
	<input type="checkbox"/> DISAPPROVAL	<input type="checkbox"/>	<input type="checkbox"/> EIS/EIA	WC	\$	<input type="checkbox"/> CONTRACT			
		<input type="checkbox"/>	<input type="checkbox"/> INITIATED	WC	\$	<input type="checkbox"/> TROOP			
		<input type="checkbox"/>	<input type="checkbox"/> EIS/EIA COMPLETED	UNFUNDED	\$				
				TOTAL		\$		DATE	

APPROVAL ACTION																				
TRANS CODE	CH/NGE	DOCUMENT NUMBER		DATE		ACTION TAKEN	FORWARDED TO													
		REQ ID	SERIAL NUMBER	MO	DA		DESIGN	ESTIMATOR	MO	DA										
1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18				
														SIGNATURE OF APPROVAL AUTHORITY						
														A - APPROVED D - DISAPPROVED						

APPROVED FOR DESIGN		SOURCE OF FUNDS	
SIGNATURE		DATE	
		<input type="checkbox"/> DIRECT <input type="checkbox"/> AUTOMATIC REIMB. <input type="checkbox"/> FUNDED REIMB.	

REMARKS	



# DISPOSITION FORM

For use of this form, see AR 340 15, the proponent agency is TAGO

REFERENCE OR OFFICE SYMBOL  
HSUA-ASM

SUBJECT  
Request for Workorder

76

TO Service Branch

FROM C, Materiel Branch DATE 12 Aug 85  
Mr. Burton/wg/1-4908

CMT 1

1. Request a workorder be submitted for bldg 4516 to make needed changes that are required for this building to be used as a Materiel Distribution Section (MDS).

- a. Sheetrock partitions installed on bottom floor need to be removed to make an open bay.
- b. South door is a single door. This needs to be removed and a double door installed to accommodate carts being loaded and unloaded.
- c. Ramp needs to be made on south door to meet truck bed height.
- d. Driveway needs to be blacktopped to south door.

2. Attached is schematic of building and changes to be made.

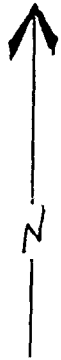


RONALD E. BURTON  
Chief, Materiel Branch

Wilson Street

77

BLDG 4516



Boiler Room

office



a

b

a

a

a

a

Sheetrock  
Partitions

DBL DOORS

RAMP

Driveway

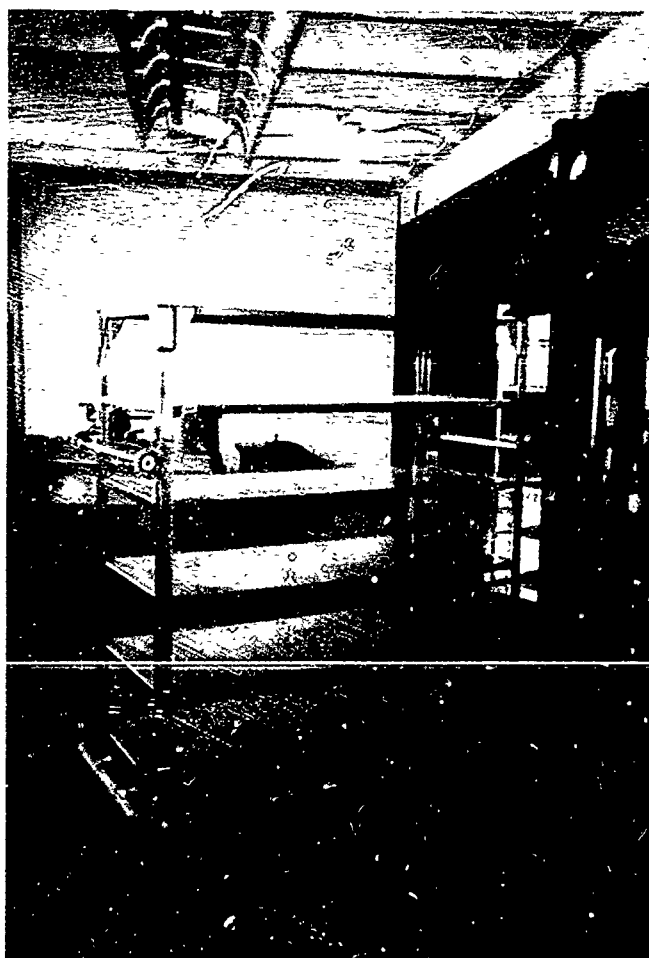
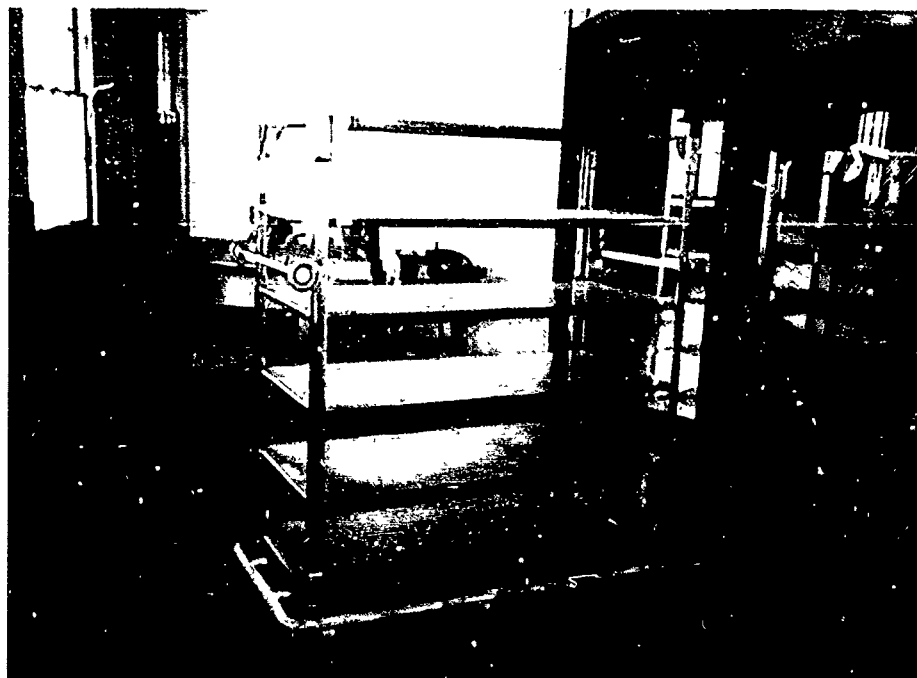
Lewis Street

BLDG

- SUSPENSE FILE

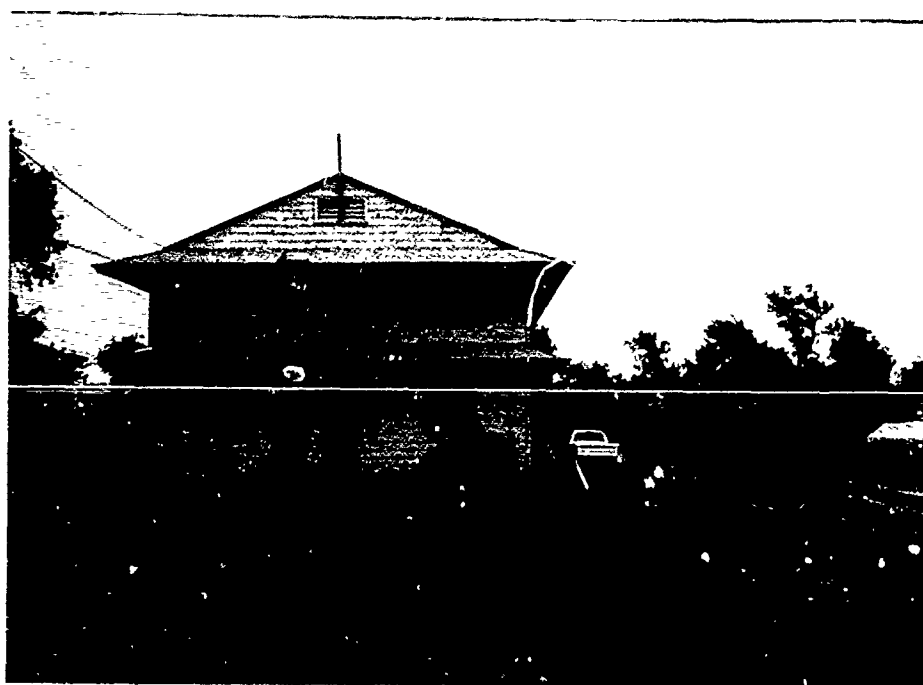
## APPENDIX C

PICTURE OF FOOD SERVICE STORAGE CARTS



APPENDIX D

PICTURE OF BUILDING 4516 INSIDE AND OUTSIDE



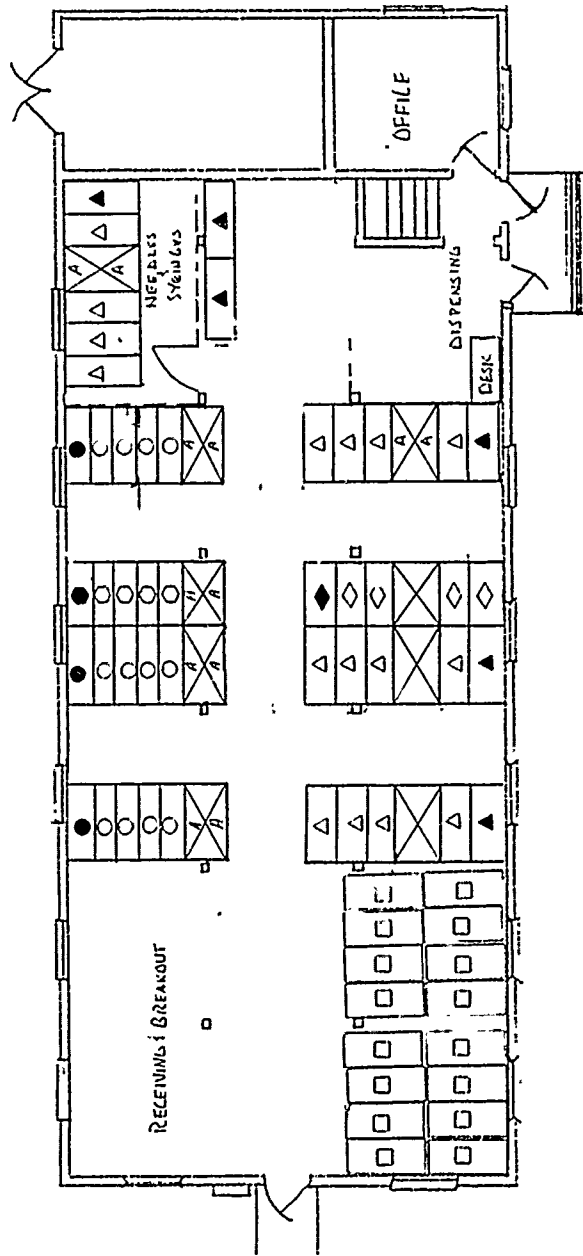






APPENDIX E

DESIGN FOR MATERIEL DISTRIBUTION CENTER,  
BUILDING 4516



SYM	QTY	UNIT	DESCRIPTION
□	16	EA	ENTER LARGE EXAMINING CASE
▲	6	EA	24X40X16 WIRE SHEET
△	12	EA	24X40X16 ACTIVE CASES
●	3	EA	18X60X16 WIRE CASE
○	12	EA	18X60X16 ACTIVE CASES
◆	1	EA	24X40X16 WIRE CASE
◇	4	EA	24X40X16 ACTIVE CASES
○	4	EA	18X60X16 ACTIVE CASES
SYM	QTY	UNIT	REVISION
21773	1	EA	18X60X16 WIRE CASES

VENDOR SPEC. REQ.		NEXT ASSY.		PART NO.	
MATERIAL: REYNOLDS ARMY HOSPITAL FT. SILL, AK					
SPECIFICATION: BLDG. # 4512					
American Medical Systems Division of American Hospital Supply Corporation					
TITLE		SCALE 1/8" = 1'-0"		DRAWING NO. B-	
		PART NO.		DRAWING NO.	
		MATERIAL TOLERANCE UNLESS OTHERWISE SPECIFIED:		DRAWN	
		DIMENSIONS ± .010		CHECKED	
		ANGLES ± .030		APPROVED	

APPENDIX F

ALL SERVICES (UCA) PROVIDED CONSUMABLE  
MEDICAL/SURGICAL SUPPLIES

ALL SERVICES (UCA) PROVIDED CONSUMABLE  
MEDICAL/SURGICAL SUPPLIES

<u>Q Account</u>	<u>Activity Title</u>
Q 303	EKG
Q 305	EEG Service
Q 302	Dermatology Clinic
Q 304	Internal Medicine Clinic
Q 340	Pediatric Clinic
Q 390	Reynolds Family Practice Clinic
Q 311	Orthopedics
Q 312	Podiatry
Q 315	General Surgery Clinic
Q 317	Urology
Q 371	Physical Therapy
Q 309	Ophthalmology
Q 301	Allergy Clinic
Q 354	Immunization Clinic
Q 310	Cast Clinic
Q 375	One Station Training (OST)
Q 376	OST--Immunizations
Q 374	OST--Optometry
Q 369	Troop Medical Clinic #1
Q 373	Troop Medical Clinic #2
Q 366	Craig Road Neighborhood Family Practice Clinic
Q 367	Kohler Loop Neighborhood Family Practice Clinic
Q 368	Harrison Family Practice/Aviation Medicine Clinic
Q 378	Troop Medical Clinic #6
Q 313	Audiology
Q 841	Dental Clinic #2
Q 830	Cowan Dental Clinic
Q 821	Weeks Dental Clinic
Q 824	Allen Dental Clinic
Q 316	Otorhinolaryngology Clinic
Q 318	Optometry (Building 4534)
Q 910	Veterinary Clinic
Q 319	Psychology Clinic
Q 323	Community Mental Health Service
Q 360	Occupational Health
Q 361	Preventive Medicine
Q 362	Community Health Nurse
Q 370	Social Work Service
Q 416	Anatomical Pathology
Q 411	Clinical Pathology
Q 445	Pulmonary Function

APPENDIX G

COMPANIES AND SAMPLE LETTER FOR  
EXCHANGE CART SYSTEMS

## S A M P L E

February 6, 1986

Office of Admin  
Resident

SUBJECT: Centralized Materiel Management Systems

[Name and Address of Company]

Dear Sirs:

I am the Administrative Resident at Reynolds Army Community Hospital, US Army MEDDAC, Fort Sill, Oklahoma. My graduate research project is to select a centralized materiel management system to be implemented within the hospital which can be utilized in our new facility which begins construction in the summer of 1986.

I am specifically addressing the use of a cart exchange or PAR system for consumable medical and surgical supplies. I would like any information you could provide on these systems in general. I also need specific information about your products. This should include size to include cubic capacity, expected life, cost, upkeep, flexibility and any other relevant information about your product.

Your assistance is greatly appreciated. If you have any questions, please contact Captain Barbara A. Wilson, 405-351-2915/3206.

Sincerely,

Barbara A. Wilson  
Captain, Medical Service Corps  
Administrative Resident

C O P Y

LIST OF COMPANIES CONTACTED FOR INFORMATION  
ON EXCHANGE CART SYSTEMS

Affiliated Hospital Products, Inc.  
Shampaine Division  
1920 S. Jefferson Avenue  
St. Louis, Missouri 63104

American Hospital Supply  
1450 Waukegan Road  
McGaw Park, Illinois 60085

American Medical Systems  
134 Merchant Street  
Cincinnati, Ohio 45246

American Pharmaseal Company  
Division of American Hospital  
Supply  
134 Merchant Street,  
Suite 200  
Cincinnati, Ohio 45246

American Sterilizer Company  
2425 W. 23rd Street  
Erie, Pennsylvania 16514

Atlantic Allow Industries  
Polk Street & Jefferson Avenue  
Union, New Jersey 07083

Blickman Health Industries  
20-21 Wagaraw Road  
Fair Lawn, New Jersey 07410

Colson Equipment Company  
Harry S. Truman Boulevard  
Caruthersville, Missouri 63830

Harloff Manufacturing Company  
750 Garden of Gods Road  
Colorado Springs, Colorado 80907

Herman Miller, Inc.  
Frank Stewart & Associates, Inc.  
2302 General Pershing Boulevard  
Oklahoma City, Oklahoma 73107

InterMetro Industries Corporation  
3001 LBJ, Suite 213  
Dallas, Texas 75234

Lakeside Manufacturing Co., Inc.  
1977 S. Allis Street  
Milwaukee, Wisconsin 53207

Lamson Corporation  
P. O. Box 4857  
Syracuse, New York 13221

Medi-Dose, Inc.  
1671 Loretta Avenue  
Feasterville, Pennsylvania 19047

Meese, Inc.  
P. O. Box 246  
Leonia, New Jersey 07605

Metropolitan Wire Corporation  
N. Washington & George  
Wilkes-Barre, Pennsylvania 18705

Suburban Surgical Company, Inc.  
574 S. Wheeling Road  
Wheeling, Illinois 60090

Tecni-Quip, Inc.  
15342 S. Vermont Avenue  
Paramount, California 90723

Youngs  
Route 309  
Lexington, Pennsylvania 18932

## APPENDIX H

### COMPARISON OF EXCHANGE CART SYSTEMS



COMPARISON OF EXCHANGE CART SYSTEMS

Company	Description of Cart	Covers	Cleanability	Life Expectancy	Security	Capacity	Versatility	Company Willingness	Record	Dealing with Medical	Support	Cost
Shargene-Wilson	Flex-Line Maxi Cart (3295-SWF)	Yes	Tubular metal frame	Welded 8" castors	No	25½x61x 66½" 59.86 cu ft	High	High	Fair	Fair	Fair	\$1,186.45 Base cart
Colson Equipment	SPD6962-00-6 Maxi Cart	Yes	Tubular metal frame	Welded	No	24-3/4x 62x66½" 59 cu ft	High	Good	Unknown	Fair	Fair	\$3,917.00 Base cart \$1,344.00
Blickman	Large cart MHC-6167 315 lbs empty	Yes	Square tubing	Minimum 10 yrs	No	26½x61x 67" 62.68 cu ft	Fair	Low	Unknown	Good	Fair	\$ 942.00 Base cart
American Pharma-seal	XL cart 170 lbs 50B026	Yes	Tubular stainless steel/solid shelves	≥ 10 yrs	No	24-5/8x 60-5/8x 66½" 57.37 cu ft 37 cu ft	High	High	High	High	High	Cart \$ 737.38 \$1,654.35

COMPARISON OF EXCHANGE CART SYSTEMS--Continued

Company	Description of Cart	Covers	Cleanability	Life Expectancy	Security	Capacity	Versatility	Company Willingness	Record	Dealing with Medical	Support	Cost
Herman Miller	Locker with tambour door (OO461LL1)	No <sup>a</sup>	Fair	Life of facility	Yes	22-13/16 x19-5/16 x65 $\frac{1}{4}$ "	Good	High	High	Good	Fair	\$ 484.98
	70 lbs					9.7 cu ft						\$ 386.18
	TR3 cart to move lockers											
	64 lbs											\$ 62.70
Metro	Rail/wall mounted											
	7 lbs											
	BCH465C-C	Yes	Square wire shelving	Medium	Yes	21x60x63"	Fair	Fair	Fair	Fair	Fair	\$1,133.00
	8" swivel castors 2 locked											\$1,630.50

<sup>a</sup>Not needed; enclosed lockers.

APPENDIX I

PICTURE OF CARTS AND ACCESSORIES

AVAILABLE FROM PHARMASEAL

## APPENDIX J

### COMPARISON OF LABOR REQUIREMENTS FOR PAR-LEVEL AND EXCHANGE CART SYSTEMS

## COMPARISON OF LABOR REQUIREMENTS FOR PAR-LEVEL AND EXCHANGE CART SYSTEMS

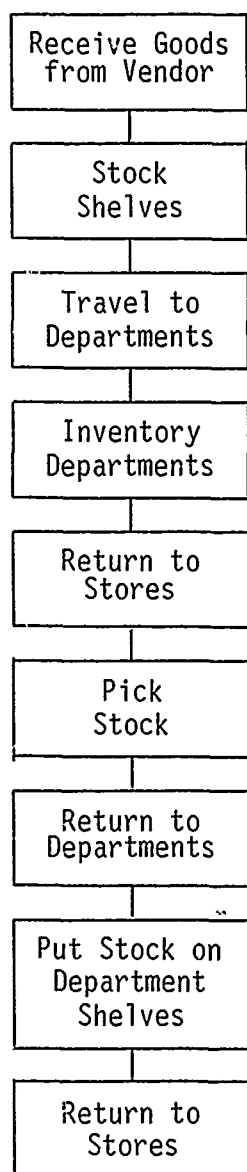
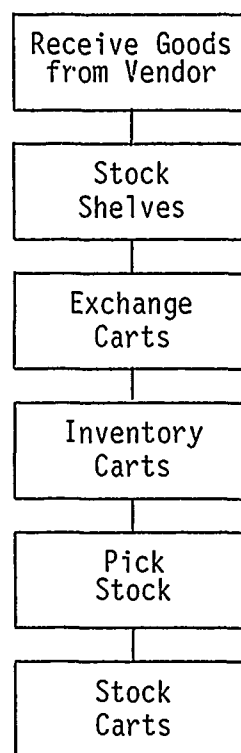
In order to analyze the labor costs of the two systems (PAR-level and exchange cart), each step for distributing consumable supplies had to be delineated for each system. Applied time/labor standards were based on:

1. Actual time trials within the hospital.
2. Standards in the literature: e.g., the writings of Dean S. Ammer, Steven P. Gray, and Charles E. Housley (see Bibliography). Numbers used were on the high side to account for structural differences.
3. Army Availability Factor.

The number of carts required to provide stock under either system was derived through inventories conducted, approximate (due to bulk issue) usage rates, and personal experience with the actual storage areas currently in use. These figures were based on daily replenishment of supplies in the user areas.

A flow diagram of the two systems and the following tables are included: Equipment Requirements, Storage Module Exchange--Exchange Cart System, Storage Module Replenishment--Exchange Cart System, Inventory Storage Modules--PAR-Level Stock System, Pick Supplies--PAR-Level Stock System, and Restock Storage Modules--PAR-Level Stock System. Finally, calculations of full-time equivalents (FTEs) for the exchange cart system and FTEs for the PAR-level stock system are presented and labor standards are provided.

## FLOW DIAGRAM OF PAR-LEVEL AND EXCHANGE CART SYSTEMS

PAR-LEVEL SYSTEMEXCHANGE CART SYSTEM

SOURCE: Jamie C. Kowalski, "Supply Distribution Options--A New Perspective," Hospital Materiel Management Quarterly 2 (Winter 1980): 90.

## EQUIPMENT REQUIREMENTS

User Area	No. of X-Large Carts Needed
Exchange Cart System	
Medical Intensive Care Unit/ Critical Care Unit	1
5 West	2
5 East--Pediatrics	1
4 West	2
3 West	2
3 East--Obstetrics	2
Newborn Nursery	1
Surgical Intensive Care Unit/ Recovery Room	1
Central Materiel Supply	2
Emergency Room	4
Subtotal	18
	x2
TOTAL	36
PAR-Level System	
Medical Intensive Care Unit/ Critical Care Unit and Surgical Intensive Care Unit/Recovery Room	1
5 West and 5 East--Pediatrics	1
4 West and Newborn Nursery	1
3 West and 3 East	1
Central Materiel Supply	1
Emergency Room	1
TOTAL	6

## STORAGE MODULE EXCHANGE--EXCHANGE CART SYSTEM

Step	Time
First Trip: Fifth Floor--Medical Intensive Care Unit (MICU)/ Critical Care Unit (CCU), 5 West, and 5 East--Pediatrics	
1. Load four carts on truck--1 min x 4	4:00 min
2. Drive truck to back dock	5:00 min
3. Unload one cart	1:00 min
4. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
5. Wait for elevator	3:50 min
6. Load cart on elevator	20 sec
7. Ride elevator to fifth floor	2:00 min
8. Unload cart	20 sec
9. Push cart to MICU/CCU--130 ft x .015 min/ft	1:95 min
10. Exchange carts	1:00 min
11. Push depleted cart to elevator--130 ft x .015 min/ft	1:95 min
12. Wait for elevator	3:50 min
13. Load cart on elevator	20 sec
14. Ride elevator to ground floor	2:00 min
15. Unload cart	20 sec
16. Push cart to back dock--179 ft x .015 min/ft	2:68 min
17. Unload full cart from truck	1:00 min
18. Load depleted cart on truck	1:00 min
19. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
20. Wait for elevator	3:50 min
21. Load cart on elevator	20 sec
22. Ride elevator to fifth floor	2:00 min
23. Unload cart	20 sec
24. Push cart to 5 West storage area--60 ft x .015 min/ft	0:90 min
25. Exchange carts	1:00 min
26. Push depleted cart to elevator--60 ft x .015 min/ft	0:90 min
27. Wait for elevator	3:50 min
28. Load cart on elevator	20 sec
29. Ride elevator to ground floor	2:00 min
30. Unload cart	20 sec
31. Push cart to back dock--179 ft x .015 min/ft	2:68 min
32. Unload full cart from truck	1:00 min
33. Load depleted cart on truck	1:00 min
34. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
35. Wait for elevator	3:50 min
36. Load cart on elevator	20 sec
37. Ride elevator to fifth floor	2:00 min
38. Unload cart	20 sec
39. Push cart to 5 West storage area--60 ft x .015 min/ft	0:90 min
40. Exchange carts	1:00 min
41. Push depleted cart to elevator--60 ft x .015 min/ft	0:90 min
42. Wait for elevator	3:50 min
43. Load cart on elevator	20 sec



## STORAGE MODULE EXCHANGE--Continued

Step	Time
<u>First Trip--Continued</u>	
44. Ride elevator to ground floor	2:00 min
45. Unload cart	20 sec
46. Push cart to back dock--179 ft x .015 min/ft	2:68 min
47. Unload cart from truck	1:00 min
48. Load depleted cart on truck	1:00 min
49. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
50. Wait for elevator	3:50 min
51. Load cart on elevator	20 sec
52. Ride elevator to 5 East--Peadiatrics	2:00 min
53. Unload cart	20 sec
54. Push cart to 5 East--Pediatrics stockage area--78 ft x .015 min/ft	1:17 min
55. Exchange carts	1:00 min
56. Push cart to elev or--78 ft x .015 min/ft	1:17 min
57. Wait for elevator	3:50 min
58. Load cart on elevator	20 sec
59. Ride elevator to ground floor	2:00 min
60. Unload cart	20 sec
61. Push cart to back dock--179 ft x .015 min/ft	2:68 min
62. Load cart on truck	1:00 min
63. Drive to Building 4516	5:00 min
64. Unload 4 carts--4 x 1 min	4:00 min
Total	108:86 min

Second Trip: 4 West and Third Floor: 3 West

1. Load four carts on truck--4 x 1 min	4:00 min
2. Drive truck to back dock	5:00 min
3. Unload one cart	1:00 min
4. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
5. Wait for elevator	3:50 min
6. Load cart on elevator	20 sec
7. Ride elevator to fourth floor	2:00 min
8. Unload cart from elevator	20 sec
9. Push cart to 4 West storage area--60 ft x .015 min/ft	0:90 min
10. Exchange carts	1:00 min
11. Push depleted cart to elevator--60 ft x .015 min/ft	0:90 min
12. Wait for elevator	3:50 min
13. Load cart on elevator	20 sec
14. Ride to ground floor	2:00 min
15. Unload cart	20 sec
16. Push cart from elevator to back dock--179 ft x .015 min/ft	2:68 min

## STORAGE MODULE EXCHANGE--Continued

Step	Time
<u>Second Trip--Continued</u>	
17. Unload full cart from truck	1:00 min
18. Load empty cart on truck	1:00 min
19. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
20. Wait for elevator	3:50 min
21. Load cart on elevator	20 sec
22. Ride elevator to fourth floor	2:00 min
23. Unload cart	20 sec
24. Push cart to 4 West storage area--60 ft x .015 min/ft	0:90 min
25. Exchange carts	1:00 min
26. Push depleted cart to elevator--60 ft. x .015 min/ft	0:90 min
27. Wait for elevator	3:50 min
28. Load cart on elevator	20 sec
29. Ride to ground floor	2:00 min
30. Unload cart	20 sec
31. Push cart to back dock--179 ft x .015 min/ft	2:68 min
32. Unload full cart from truck	1:00 min
33. Load empty cart into truck	1:00 min
34. Push cart to elevator--179 ft x .015 min/ft	2:68 min
35. Wait for elevator	3:50 min
36. Load cart	20 sec
37. Ride elevator to third floor	2:00 min
38. Push cart to 3 West--60 ft x .015 min/ft	0:90 min
39. Exchange carts	1:00 min
40. Push depleted cart to elevator--80 ft x .015 min/ft	1:20 min
41. Wait for elevator	3:50 min
42. Load cart on elevator	20 sec
43. Ride elevator to ground floor	2:00 min
44. Unload cart	20 sec
45. Push cart to back dock--179 ft x .015 min/ft	2:68 min
46. Unload full cart from truck	1:00 min
47. Load depleted cart on truck	1:00 min
48. Push cart to elevator--179 ft x .015 min/ft	2:68 min
49. Wait for elevator	3:50 min
50. Load cart on elevator	20 sec
51. Ride elevator to third floor	2:00 min
52. Unload cart from elevator	20 sec
53. Push cart to 3 West--60 ft x .015 min/ft	0:90 min
54. Exchange carts	1:00 min
55. Push depleted cart to elevator--60 ft x .015 min/ft	0:90 min
56. Wait for elevator	3:50 min
57. Load cart	20 sec
58. Ride elevator to ground floor	2:00 min
59. Unload cart	20 sec
60. Push cart to back dock--179 ft x .015 min/ft	2:68 min

## STORAGE MODULE EXCHANGE--Continued

Step	Time
<u>Second Trip--Continued</u>	
61. Load cart on truck	1:00 min
62. Drive to Building 4516	5:00 min
63. Unload four carts--4 x 1 min	4:00 min
Total	107.94 min

Third Trip: Third Floor--3 East--Obstetrics and 3 East--Newborn  
Nursery and Second Floor: Surgical Intensive Care Unit (SICU)/  
Recovery Room (RR)

1. Load four carts on truck--1 min x 4	4:00 min
2. Drive truck to back dock	5:00 min
3. Unload one cart	1:00 min
4. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
5. Wait for elevator	3:50 min
6. Load cart on elevator	20 sec
7. Ride elevator to third floor	2:00 min
8. Unload cart	20 sec
9. Push cart to 3 East--Obstetrics--98 ft x .015 min/ft	1:47 min
10. Exchange carts	1:00 min
11. Push depleted cart to elevator--98 ft x .015 min/ft	1:47 min
12. Wait for elevator	3:50 min
13. Load empty cart on elevator	20 sec
14. Ride elevator to ground floor	2:00 min
15. Unload cart	20 sec
16. Push cart to back dock--179 ft x .015 min/ft	2:68 min
17. Unload full cart from truck	1:00 min
18. Load depleted cart on truck	1:00 min
19. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
20. Wait for elevator	3:50 min
21. Load cart on elevator	20 sec
22. Ride elevator to third floor	2:00 min
23. Unload cart	20 sec
24. Push cart to 3 East--Obstetrics--98 ft x .015 min/ft	1:47 min
25. Exchange carts	1:00 min
26. Push depleted cart to elevator--98 ft x .015 min/ft	1:47 min
27. Wait for elevator	3:50 min
28. Load depleted cart on elevator	20 sec
29. Ride elevator to ground floor	2:00 min
30. Unload cart	20 sec
31. Push cart to back dock--179 ft x .015 min/ft	2:68 min
32. Unload full cart from truck	1:00 min
33. Load depleted cart on truck	1:00 min
34. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min

## STORAGE MODULE EXCHANGE--Continued

Step	Time
<u>Third Trip--Continued</u>	
35. Wait for elevator	3:50 min
36. Load cart on elevator	20 sec
37. Ride elevator to third floor	2:00 min
38. Unload cart	20 sec
39. Push cart to 3 East--Newborn Nursery--80 ft x .015 min/ft	1:20 min
40. Exchange carts	1:00 min
41. Push depleted cart to elevator--80 ft x .015 min/ft	1:20 min
42. Wait for elevator	3:50 min
43. Load cart on elevator	20 sec
44. Ride elevator to ground floor	2:00 min
45. Unload cart	20 sec
46. Push cart to back dock--179 ft x .015 min/ft	2:68 min
47. Unload cart from truck	1:00 min
48. Load depleted cart on truck	1:00 min
49. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
50. Wait for elevator	3:50 min
51. Load cart on elevator	20 sec
52. Ride elevator to second floor	2:00 min
53. Unload cart	20 sec
54. Push cart to SICU/RR--42 ft x .015 min/ft	0:63 min
55. Exchange carts	1:00 min
56. Push cart to elevator--42 ft x .015 min/ft	0:63 min
57. Wait for elevator	3:50 min
58. Load cart on elevator	20 sec
59. Ride elevator to ground floor	2:00 min
60. Unload cart	20 sec
61. Push cart to back dock--179 ft x .015 min/ft	2:68 min
62. Load depleted cart on truck	1:00 min
63. Drive to Building 4516	5:00 min
64. Unload four carts--4 x 1 min	4:00 min
Total	106:31 min

Fourth Trip: Second Floor--Central Materiel Supply (CMS)  
and First Floor--Emergency Room (ER)

1. Load four carts on a truck--4 x 1 min	4:00 min
2. Drive truck to back dock	5:00 min
3. Unload one cart	1:00 min
4. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
5. Wait for elevator	3:50 min
6. Load cart on elevator	20 sec
7. Ride elevator to second floor	2:00 min
8. Unload cart from elevator	20 sec

## STORAGE MODULE EXCHANGE--Continued

Step	Time
<u>Fourth Trip--Continued</u>	
9. Push cart to CMS--150 ft x .015 min/ft	2:25 min
10. Exchange carts	1:00 min
11. Push depleted cart to elevator--150 ft x .015 min/ft	2:25 min
12. Wait for elevator	3:50 min
13. Load cart on elevator	20 sec
14. Ride elevator to ground floor	2:00 min
15. Unload cart	20 sec
16. Push cart to back dock--179 ft x .015 min/ft	2:68 min
17. Unload full cart from truck	1:00 min
18. Load empty cart on truck	1:00 min
19. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
20. Wait for elevator	3:50 min
21. Load cart on elevator	20 sec
22. Ride elevator to second floor	2:00 min
23. Unload cart	20 sec
24. Push cart to CMS--150 ft x .015 min/ft	2:25 min
25. Exchange carts	1:00 min
26. Push depleted cart to elevator--150 ft x .015 min/ft	2:25 min
27. Wait for elevator	3:50 min
28. Load cart on elevator	20 sec
29. Ride to ground floor	2:00 min
30. Unload cart	20 sec
31. Push cart to back dock--179 ft x .015 min/ft	2:68 min
32. Unload full cart from truck	1:00 min
33. Load empty cart onto truck	1:00 min
34. Push full cart to elevator--179 ft x .015 min/ft	2:68 min
35. Wait for elevator	3:50 min
36. Load cart	20 sec
37. Ride elevator to first floor	2:00 min
38. Push cart to ER--150 ft x .015 min/ft	2:25 min
39. Exchange carts	1:00 min
40. Push depleted cart to elevator--150 ft x .015 min/ft	2:25 min
41. Wait for elevator	3:50 min
42. Load cart on elevator	20 sec
43. Ride elevator to ground floor	2:00 min
44. Unload cart	20 sec
45. Push cart to back dock--179 ft x .015 min/ft	2:68 min
46. Unload full cart from truck	1:00 min
47. Load depleted cart on truck	1:00 min
48. Push cart to elevator--179 ft x .015 min/ft	2:68 min
49. Wait for elevator	3:50 min
50. Load cart on elevator	20 sec
51. Ride elevator to first floor	2:00 min
52. Unload cart from elevator	20 sec

## STORAGE MODULE EXCHANGE--Continued

Step	Time
<u>Fourth Trip--Continued</u>	
53. Push cart to ER--150 ft x .015 min/ft	2:25 min
54. Exchange carts	1:00 min
55. Push depleted cart to elevator--150 ft x .015 min/ft	2:25 min
56. Wait for elevator	3:50 min
57. Load cart	20 sec
58. Ride elevator to ground floor	2:00 min
59. Unload cart	20 sec
60. Push cart to back dock--179 ft x .015 min/ft	2:68 min
61. Load cart on truck	1:00 min
62. Drive to Building 4516	5:00 min
63. Unload four carts--4 x 1 min	4:00 min
Total	116.19 min

Fifth Trip: First Floor--ER

1. Load two carts on truck--2 x 1 min	2:00 min
2. Drive truck to back dock	5:00 min
3. Unload one cart	1:00 min
4. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
5. Wait for elevator	3:50 min
6. Load cart on elevator	20 sec
7. Ride elevator to first floor	2:00 min
8. Unload cart from elevator	20 sec
9. Push cart to ER--150 ft x .015 min/ft	2:25 min
10. Exchange carts	1:00 min
11. Push depleted cart to elevator--150 ft x .015 min/ft	2:25 min
12. Wait for elevator	3:50 min
13. Load empty cart on elevator	20 sec
14. Ride elevator to ground floor	2:00 min
15. Unload cart	20 sec
16. Push cart to back dock--179 ft x .015 min/ft	2:68 min
17. Unload full cart from truck	1:00 min
18. Load depleted cart on truck	1:00 min
19. Push full cart to staff elevator--179 ft x .015 min/ft	2:68 min
20. Wait for elevator	3:50 min
21. Load cart on elevator	20 sec
22. Ride elevator to first floor	2:00 min
23. Unload cart	20 sec
24. Push cart to ER--150 ft x .015 min/ft	2:25 min
25. Exchange carts	1:00 min
26. Push depleted cart to elevator--150 ft x .015 min/ft	2:25 min
27. Wait for elevator	3:50 min
28. Load cart on elevator	20 sec

STORAGE MODULE EXCHANGE--Continued

Step	Time
<u>Fifth Trip--Continued</u>	
29. Ride elevator to ground floor	2:00 min
30. Unload cart	20 sec
31. Push cart to back dock--179 ft x .015 min/ft	2:68 min
32. Load cart on truck	1:00 min
33. Drive to Building 4516	5:00 min
34. Unload two carts--2 x 1 min	2:00
Total	63:38 min
<u>All Trips</u>	
Grand total	502:68 min

## STORAGE MODULE REPLENISHMENT--EXCHANGE CART SYSTEM

Step	Time
1. Inventory depleted storage module received	25 min
2. Pick supplies and restock storage module using inventory sheet	35 min
3. Repeat for all storage modules--18 x 60 min	18 hrs



## INVENTORY STORAGE MODULES--PAR-LEVEL STOCK SYSTEM

Step	Time
First Trip: Fifth Floor--Medical Intensive Care Unit (MICU)/ Critical Care Area (CCU) and 5 East--Pediatrics, Fourth Floor--4 West, and Third Floor--3 West	
1. Walk from Building 4516 to staff elevators in main hospital--1,010 ft x .010 min/ft	10:10 min
2. Wait for elevator	3:50 min
3. Ride elevator to fifth floor	2:00 min
4. Walk to MICU/CCU storage area--130 ft x .010 min/ft	1:30 min
5. Take inventory	25:00 min
6. Walk to 5 West storage area--51 ft x .010 min/ft	0:51 min
7. Take inventory--2 x 25 min	50:00 min
8. Walk to 5 East--Pediatrics storage area--157 ft x .010 min/ft	1:57 min
9. Take inventory	25:00 min
10. Walk to elevator--78 ft x .010 min/ft	0:78 min
11. Wait for elevator	3:50 min
12. Ride elevator to fourth floor	2:00 min
13. Walk to 4 West storage area--60 ft x .010 min/ft	0:60 min
14. Take inventory--2 x 25 min	50:00 min
15. Walk to elevator--60 ft x .010 min/ft	0:60 min
16. Wait for elevator	3:50 min
17. Ride elevator to third floor	2:00 min
18. Walk to 3 West--60 ft x .010 min/ft	0:60 min
19. Take inventory--2 x 25 min	50:00 min
20. Walk to elevator--60 ft x .010 min/ft	0:60 min
21. Ride elevator to first floor	2:00 min
32. Walk from hospital to Building 4516--1,010 ft x .010 min/ft	10:10 min
Total	241.76 min

Second Trip: Third Floor--3 East--Obstetrics and 3 East--Newborn  
Nursery, Second Floor--Surgical Intensive Care Unit (SICU)/  
Recovery Room (RR) and Central Materiel Supply,  
and First Floor--Emergency Room (ER)

1. Walk from Building 4516 to staff elevators in main hospital--1,010 ft x .010 min/ft	10:10 min
2. Wait for elevator	3:50 min
3. Ride elevator to third floor	2:00 min
4. Walk to 3 East--Obstetrics--150 ft x .010 min/ft	1:50 min
5. Take inventory--2 x 25 min	50:00 min
6. Walk to 3 East--Newborn nursery--80 ft x .010 min/ft	0:80 min
7. Take inventory	25:00 min

## INVENTORY STORAGE MODULES--Continued

Step	Time
<u>Second Trip--Continued</u>	
8. Walk to staff elevator--80 ft x .010 min/ft	0:80 min
9. Wait for elevator	3:50 min
10. Ride elevator to second floor	2:00 min
11. Walk to SICU/RR storage area--42 ft x .010 min/ft	0:42 min
12. Take inventory	25:00 min
13. Walk to Central Materiel Supply--150 ft x .010 min/ft	1:50 min
14. Take inventory--2 x 25 min	50:00 min
15. Walk to elevator--150 ft x .010 min/ft	1:50 min
16. Wait for elevator	3:50 min
17. Ride elevator to first floor	2:00 min
18. Walk to ER--150 ft x .010 min/ft	1:50 min
19. Take inventory--4 x 25 min	100:00 min
20. Walk from ER (hospital) to Building 4516--1,160 ft x .010 min/ft	11:60 min
Total	296.22 min
<u>All Trips</u>	
Grand Total	537.98 min

## PICK SUPPLIES--PAR-LEVEL STOCK SYSTEM

Step	Time
1. Pick supplies using inventory sheet	20 min
2. Place supplies into transfer cart	10 min
3. Repeat for all areas--30 min/cart x 6 carts <sup>a</sup>	3 hrs

<sup>a</sup>Medical Intensive Care Unit/Surgical Intensive Care Unit, 1 cart; 3 West and 3 East--1 cart; 5 West and 5 East--Pediatrics--1 cart; 4 West and 3 East--Newborn Nursery--1 cart; Central Materiel Supply--1 cart; and Emergency Room--1 cart.

## RESTOCK STORAGE MODULES--PAR-LEVEL STOCK SYSTEM

Step	Time
First Trip: Fifth Floor--Medical Intensive Care Unit (MICU)/Critical Cart Unit (CCU), 5 West, and 5 West--Pediatrics; Fourth Floor--4 West; Third Floor--3 West, 3 East--Obstetrics, and 3 East--Newborn Nursery; and Second Floor--Surgical Intensive Care Unit (SICU)/Recovery Room (RR)	
1. Load carts on truck--4 x 1 min	4:00 min
2. Drive truck to back dock	5:00 min
3. Unload one cart	1:00 min
4. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
5. Wait for elevator	3:50 min
6. Load cart on elevator	20 sec
7. Ride elevator to fifth floor	2:00 min
8. Unload cart from elevator	20 sec
9. Push transfer cart to MICU/CCU storage area--130 ft x .015 min/ft	1:95 min
10. Restock MICU/CCU storage module	25:00 min
11. Push transfer cart to elevator	1:95 min
12. Wait for elevator	3:50 min
13. Load cart on elevator	20 sec
14. Ride elevator to second floor	2:00 min
15. Unload cart from elevator	20 sec
16. Push cart to SICU/RR--42 ft x .015 min/ft	0:63 min
17. Restock SICU/RR storage module	25:00 min
18. Push cart to elevator	0:63 min
19. Wait for elevator	3:50 min
20. Load cart on elevator	20 sec
21. Ride elevator to ground floor	2:00 min
22. Unload cart from elevator	20 sec
23. Push cart to back dock--179 ft x .015 min/ft	2:68 min
24. Unload full transfer cart	1:00 min
25. Load depleted transfer cart	1:00 min
26. Push full transfer cart to elevator--179 ft x .015 min/ft	2:68 min
27. Wait for elevator	3:50 min
28. Load cart on elevator	20 sec
29. Ride elevator to fifth floor	2:00 min
30. Unload cart from elevator	20 sec
31. Push cart to 4 West--60 ft x .015 min/ft	0:90 min
32. Restock 5 West storage modules--2 x 25 min	50:00 min
33. Push cart to 5 East--Pediatrics--138 ft x .015 min/ft	2:07 min
34. Restock 5 East storage module	25:00 min
35. Push cart to elevator--78 ft x .015 min/ft	1:17 min
36. Wait for elevator	3:50 min
37. Load cart on elevator	20 sec

## RESTOCK STORAGE MODULES--Continued

Step	Time
<u>First Trip--Continued</u>	
38. Ride elevator to ground floor	2:00 min
39. Unload cart from elevator	20 sec
40. Push cart to back dock--179 ft x .015 min/ft	2:68 min
41. Unload full transfer cart from truck	1:00 min
42. Load empty transfer cart on truck	1:00 min
43. Push transfer cart to elevator--179 ft x .015 min/ft	2:68 min
44. Wait for elevator	3:50 min
45. Load cart	20 sec
46. Ride elevator to fourth floor	2:00 min
47. Unload cart	20 sec
48. Push to 4 West--60 ft x .015 min/ft	0:90 min
49. Replenish 4 West storage modules--2 x 25 min	50:00 min
50. Push cart to elevator--60 ft x .015 min/ft	0:90 min
51. Wait for elevator	3:50 min
52. Load cart	20 sec
53. Ride elevator to third floor	2:00 min
54. Unload cart	20 sec
55. Push cart to 3 East--Newborn Nursery--80 ft x .015 min/ft	1:20 min
56. Replenish storage module	25:00 min
57. Push cart to elevator--80 ft x .015 min/ft	1:20 min
58. Wait for elevator	3:50 min
59. Load cart on elevator	20 sec
60. Ride elevator to ground floor	2:00 min
61. Unload cart	20 sec
62. Push cart to back dock--179 ft x .015 min/ft	2:68 min
63. Unload full transfer cart	1:00 min
64. Load empty transfer cart	1:00 min
65. Push full transfer cart to elevator--179 ft x .015 min/ft	2:68 min
66. Wait for elevator	3:50 min
67. Load cart	20 sec
68. Ride elevator to third floor	2:00 min
69. Unload cart	20 sec
70. Push transfer cart to 3 West	0:90 min
71. Replenish storage modules--2 x 25 min	50:00 min
72. Push transfer cart to 3 East--Obstetrics--150 ft x .015 min/ft	2:25 min
73. Replenish 3 East--Obstetrics storage modules--2 x 25 min	50:00 min
74. Push cart to staff elevator--98 ft x .015 min/ft	1:47 min
75. Wait for elevator	3:50 min
76. Load cart	20 sec
77. Ride elevator to ground floor	2:00 min

RESTOCK STORAGE MODULES--Continued

Step	Time
<u>First Trip--Continued</u>	
78. Unload cart	20 sec
79. Push cart to back dock--179 ft x .015 min/ft	2:68 min
80. Load empty transfer cart	1:00 min
81. Drive to Building 4516	5:00 min
82. Unload four carts--4 x 1 min	4:00 min
Total	401.05 min
<u>Second Trip: Second Floor--Central Materiel Supply (CMS) and First Floor--Emergency Room (ER)</u>	
1. Load two transfer carts on truck--2 x 1 min	2:00 min
2. Drive from Building 4516 to back dock of hospital	5:00 min
3. Unload transfer cart from truck	1:00 min
4. Push cart to staff elevator--179 ft x .015 min/ft	2:68 min
5. Wait for elevator	3:50 min
6. Load cart	20 sec
7. Ride elevator to second floor	2:00 min
8. Unload cart	20 sec
9. Push cart to CMS--150 ft x .015 min/ft	2:25 min
10. Replenish storage modules--2 x 25 min	50:00 min
11. Push cart to elevator--150 ft x .015 min/ft	2:25 min
12. Wait for elevator	3:50 min
13. Load cart	20 sec
14. Ride elevator to ground floor	2:00 min
15. Unload cart	20 sec
16. Push cart to back dock--179 ft x .015 min/ft	2:68 min
17. Unload full transfer cart	1:00 min
18. Load empty transfer cart	1:00 min
19. Push full transfer cart to elevator--179 ft x .015 min/ft	2:68 min
20. Wait for elevator	3:50 min
21. Load cart	20 sec
22. Ride elevator to first floor	2:00 min
23. Unload cart	20 sec
24. Push cart to ER--150 ft x .015 min/ft	2:25 min
25. Replenish storage modules--3 x 25 min	75:00 min
26. Push cart to elevator--150 ft x .015 min/ft	2:25 min
27. Wait for elevator	3:50 min
28. Load cart	20 sec
29. Ride elevator to ground floor	2:00 min
30. Unload cart	20 sec
31. Push cart to back dock--179 ft x .015 min/ft	2:68 min
32. Load empty transfer cart on truck	1:00 min

RESTOCK STORAGE MODULES--Continued

Step	Time
<u>Second Trip--Continued</u>	
33. Drive to Bulding 4516	5:00 min
34. Unload transfer carts--2 x 1 min	2:00 min
Total	187:38 min
<u>All Trips</u>	
Grand Total	588:43 min

CALCULATIONS OF FULL-TIME EQUIVALENTS (FTEs)  
FOR EXCHANGE CART SYSTEM

Storage module exchange	502.68 min/day
Storage module replenishment	<u>+1,080:00 min/day</u>
Time requirement	<u>1,582.68 min/day</u>

$$1,582.68 \text{ min/day} = 26.38 \text{ hrs worked/day}$$

$$\underline{\quad \quad} \times 7 \text{ days/wk}$$

$$\underline{\underline{184.65 \text{ hrs/wk}}}$$

$$184.65 \text{ hrs/wk} \times 4 \text{ wks} = 738.58 \div 145 \text{ (AAF)} = 5.09 \text{ FTEs}$$

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AAF = Army AVailability Factor



CALCULATION OF FULL-TIME EQUIVALENTS (FTEs)  
FOR PAR-LEVEL STOCK SYSTEM

Inventory storage modules	537.98 min/day
Pick supplies	180:00 min/day
Replenish storage modules	<u>+588.43 min/day</u>
Time requirement	<u>1,306.41 min/day</u>

$$1,306.41 \text{ min/day} = 21.77 \text{ hrs worked/day}$$

$$\underline{\quad \times 7 \text{ days/wk}}$$

$$\underline{\underline{152.39 \text{ hrs/wk}}}$$

$$152.39 \text{ hrs/wk} \times 4 \text{ wks} = 609.56 \div 145 \text{ (AAF)} = 4.20 \text{ FTEs}$$

---

AAF = Army Availability Factor

## LABOR STANDARDS

1. Walking, pushing a storage module (cart)	.015 min 1 ft
2. Walking	.010 min 1 ft
3. Waiting for an elevator	3.5 min
4. Elevator ride	2 min
5. Load storage module onto elevator	20 sec
6. Unload storage module from elevator	20 sec
7. Exchange storage modules	1 min
8. Inventory storage module	25 min
9. Replenish storage module-exchange cart	35 min
10. Replenish storage module-PAR stock	25 min
11. Pick supplies - PAR stock	30 min
12. Drive from Building 4516 to Main Hospital	5 min
13. Load cart on truck	1 min
14. Unload cart from truck	1 min

APPENDIX K

LIST OF CART EQUIPMENT REQUIRED

## LIST OF CART EQUIPMENT REQUIRED

Quantity	Category No.	Description	Cost
36	50B026	X-Large, Welded, Poly Castors	\$737.38
72	50B321	Shelf, Stainless Steel with Runners	101.31
72	50B322	Shelf, Stainless Steel without Runners	76.60
360	50B489	Retaining Rod, Double	22.51
36	50B426	Cart Cover	112.85
180	50B372	Shelf Divider	11.16
216	50B511	Drawer, Wide	27.35
360	50B512	Divider, Long	2.79
432	50B513	Divider, Short	2.64
18	50B522 BL	Large Bin	23.74
36	50B520 BL	Medium Bin	21.83
216	50B525 BL	Large Divider	4.76

APPENDIX L

STANDARD OPERATING PROCEDURE FOR OPERATION OF  
MATERIEL DISTRIBUTION SYSTEM

SUBJECT: Standing Operating Procedure for Materiel Distribution Branch

TO: See Distribution

1. REFERENCES: MEDDAC Memorandum 40-61  
AR 40-61  
AR 710-2
2. PURPOSE: To establish procedures and guidance for the operation of the Materiel Distribution Service (MDS).
3. APPLICABILITY: This standing operating procedure applies to all U.S. Army Medical Department Activity (MEDDAC) activities which are provided consumable medical and surgical supplies by the Logistics Division, all outpatients who are provided consumable medical and surgical supplies by health care provider prescriptions, and the staff of the Materiel Distribution Branch.
4. MISSION: To provide consumable medical and surgical supplies to all designated activities of the U.S. Army MEDDAC, Fort Sill.
  - a. Requisition and stockage of consumable medical and surgical supplies less pharmaceuticals.
  - b. Inventory, restocking, delivery, and exchange of carts on a daily basis or as designated.
  - c. Provision of supplies for outpatients on a prescription basis.
  - d. Response to requests and delivery of items on an as-needed basis for one-time issues and emergencies.
5. RESPONSIBILITY:
  - a. Chief of Logistics Division
    - (1) Insure that consumable medical and surgical supplies are provided to user activities through the MDS.
    - (2) Insure that outpatients are provided needed support on a prescription basis.
  - b. MDS Supervisor
    - (1) Develop and maintain section in accordance with established policy and regulation.
    - (2) Supervise all MDS personnel.
6. STAFFING: The MDS will consist of the following individuals and duties as indicated:
  - a. One MDS supervisor--with overall responsibility and authority for operation of the MDS.
  - b. Two supply clerks--with responsibility for all finance/accounting functions, to include ordering all supplies; charging using activities as restocked; monitoring trends, usage rates, and

user activity targets; and charging outpatient scripts.

- c. Three medical supply workers--with responsibility for stocking the MDS, delivering/exchanging carts, inventorying and restocking carts, maintaining carts, filling one-time requisitions, and filling outpatient prescriptions.

## 7. PROCEDURE:

- a. Hours of Operation--The MDS will be operational from 0700-1800 hours seven days a week. The initial shift, 0700-1600 hours, will be staffed with 1 supervisor, 1 clerk, and 1 warehouseman. The second shift, 0900-1800 hours, will be staffed with 1 medical supply warehouseman and 1 clerk, who also will function as assistant supervisor.
- b. Requisitions
  - (1) The supply clerks will maintain a two-week inventory of all consumable medical and surgical supplies.
  - (2) Supplies will be requisitioned as required or when the reorder point is reached for stocked items. Requisitions will be submitted using the procedure outlined in Fort Sill MEDDAC Memorandum 40-61, Logistics Policies and Procedures, from the Materiel Branch.
  - (3) Demand histories must be maintained.
- c. Inventories--Turnover of supplies in the MDS will be an ongoing process; therefore, continuous inventories will be necessary. To accomplish an inventory, each supply clerk will be assigned a selected portion of stock numbers to monitor, inventory, and be responsible for maintaining at an appropriate stock level.
- d. Receiving Supplies--
  - (1) Supplies will be received in the MDS from the Medical Supply Warehouse and be accompanied by a \_\_\_\_\_ (MRO or warehouse receipt).
  - (2) MDS personnel must be authorized on DA Form 1687 (Notice of Delegation of Authority--Receipt for Supplies) to receipt for supplies.
  - (3) Personnel receiving supplies will be responsible for verifying that stock number, quantity, nomenclature, and requisitioner are correct before accepting supplies. Once accepted, supplies must be placed on appropriate shelves and the receipt annotated with the number of units of measures received. This action will facilitate posting to stock accounting cards by supply clerks.
- e. Warehousing Supplies--
  - (1) After supplies have been properly received, they will be placed in their assigned location at the earliest possible time.
  - (2) New items should always be placed to the rear of the items presently on the shelf to insure proper rotation of stock.
  - (3) Supplies requiring security or special handling will be treated accordingly (e.g., needles and syringes).

- (4) Supplies which have a shelf life/expiration date will be monitored on a periodic basis and expired stock will be disposed of in accordance with instructions from the Medical Materiel Branch.
- f. Issuing Supplies--
  - (1) Supplies will be issued from the MDS to restock carts for exchange, to fill one-time requisitions to valid activities, and to fill prescriptions for outpatients.
  - (2) When MDS personnel replenish the stock on an exchange cart, they must annotate the inventory sheet with the quantity (unit of measure) being added to bring the cart to the authorized level. This information will be used to assess charges to the customers.
  - (3) In addition to filling out a charge form, a file will be maintained on outpatients reporting with a prescription to be filled and authorized treatment by the Fort Sill MEDDAC.
  - (4) Supply items issued on an "on-call" basis (either delivered or over the counter) will be accounted for by utilizing a charge form. This form should be signed by personnel from the receiving activity, acknowledging receipt of the items issued to wards/clinics.
- g. Outpatient Supplies--
  - (1) Supplies will be issued to outpatients over the counter upon presentation of a prescription from an approved patient care provider (as determined by the Deputy Commander for Clinical Services [DCCS]). Prescriptions will not be honored unless physician signature, name, rank, Social Security number, and activity are annotated.
  - (2) Supplies for outpatients will be limited to those items and quantities authorized by the DCCS.
  - (3) All outpatients must complete a charge form and sign it upon receipt of the item(s).
  - (4) One-time prescriptions must have the patient's full name and address and the sponsor's Social Security number.
  - (5) The prescription for a one-time issue will be stapled to the charge form.
  - (6) If a prescription authorizes a certain number of refills in addition to the initial issue, all appropriate information will be placed on a 5x8-inch card and be maintained in a file box. The prescription will be stapled to the back of the card. To acquire refills, patients will inform the MDS person on duty of their name and the fact that they have a prescription on file. When the last authorized refill has been filled, the MDS representative will inform the patient that a new prescription will be required before any more supplies can be issued. A charge form must be completed for each issue.
  - (7) All prescriptions will be charged to the patient care provider's originating activity. If a patient is being discharged from a ward, that ward will be charged. If the patient is seen in a clinic, that clinic will be charged.



- (8) Prescriptions should be for MDS items only and not include items from other activities, such as pharmacy or MBBP.
- (9) Prescription issues will be annotated on the daily on-call consolidation form and charge slips will be maintained
- h. Maintenance of Exchange Carts and MDS--
  - (1) The MDS shelf area will be dusted daily and all floors swept.
  - (2) Exchange carts will be dusted as necessary when they are inventoried and restocked.
  - (3) Carts will be cleaned using an antiseptic solution every ninety days or more frequently if deemed necessary by the MDS supervisor, to include:
    - (a) Removing supplies.
    - (b) Removing shelves and drawers.
    - (c) Using disposable washcloths to wash shelves, drawers, and carts with antiseptic solution mixed with warm water.
    - (d) Allowing drawers and shelves to air-dry.
    - (e) Replacing drawers and shelves in carts.
    - (f) Replacing supplies once all areas on carts are completely dry.
  - (4) Cart covers will be wiped down at least on a weekly basis using an antiseptic solution.
- i. Security--
  - (1) The supervisor and the assistant supervisor will be responsible for key control of the MDS.
  - (2) All entrances will be locked after 1800 hours.
  - (3) The Administrative Officer of the Day and the evening/night nurse supervisor will have access to the MDS after normal operating hours.
- j. Forms Usage--The following listed forms will be used by MDS personnel in the accomplishment of their daily tasks. All entries will be printed legibly or typed except where signatures are required. Samples of forms are attached at indicated tabs:
  - (1) Tab A--DA Form 2765, Request for Issue or Turn-In, Pre-punched.
  - (2) Tab B--DA Form 2765-1, Manual Request for Issue or Turn-In.
  - (3) Tab C--DA Form 9496, Request for Stockage.
  - (4) Tab D--Materiel Distribution Service Charge Form.
  - (5) Tab E--DA 3318, Record of Demands.
  - (6) Tab F--DA Form 1687, Delegation of Authority to Order and Receive Medical Supplies.
  - (7) Tab G--Consolidation of On-Call Issues.
  - (8) Tab H--Daily Exchange Cart Inventory.
  - (9) Tab I--Charge Transmittal Form.
- k. Stockage Levels--Stockage levels will be reviewed on a quarterly basis by MDS and appropriate nursing personnel. These levels can be adjusted on a more frequent basis as required.
- l. Standardization Committee--All nonstandard items stocked by the MDS must be approved by the Standardization Committee. Requests for stockage of a nonstandard item must be submitted on a DA Form 2496 to the committee for approval.

## m. Accounting--

- (1) Inventory sheets must be maintained on a monthly basis for each activity serviced by the MDS. The forms must be totaled for monthly issues.
- (2) All outpatient prescriptions and on-call charge forms (delivered or over the counter) must be totaled for each activity.
- (3) All totaled charges will be transferred to a charge transmittal sheet under the applicable Account Processing Code (activity). The charge transmittal sheet will be forwarded to the Comptroller Division for the individual Account Processing Codes to be charged and the MDS to be credited with the transfers.

MATERIEL DISTRIBUTION SERVICE  
REQUISITION FORM

Date \_\_\_\_\_

Outpatient:

Activity

Name \_\_\_\_\_

APC

Address

Phone No. \_\_\_\_\_

Received by \_\_\_\_\_

Provider

[illegible]

FS MEDDAC Form



APPENDIX M

INITIAL PLAN FOR INVENTORY HISTORY

C O P Y

130

HSUA-HQ

Central Materiel Management

Chief, Dept of Nursing

Admin Resident

28 Jan 86

1. The selection of a centralized management system for consumable medical/surgical supplies is the intent of the Administrative Resident's Graduate Research Project. To honestly evaluate different forms of centralized materiel management, an accurate reflection of inventory levels and usage of consumable medical/surgical supplies is required.
2. The proposed plan is to accumulate an inventory history of these supplies for 60 days (1 Feb-31 Mar) on three wards (3W, 4W, 5W). Items of interest include usage rates, stockage levels (PAR), management of these resources, and ordering/stocking procedures.
3. An initial inventory would be conducted on Friday, 31 January 1986, utilizing the stockage lists previously submitted to Medical Supply. This crucial step and the entire process can only be successful if all consumable supplies are accounted for, not only those in "official" supply areas.
4. Following the initial inventory, the items would be inventoried on a daily basis through the 31st of March and the quantity on hand each day would be annotated on the forms provided.
5. Prior to the start of this project, the Administrative Resident will coordinate all activities with the three wardmasters involved. If at any time the requirements become too time-consuming or interfere with patient care, they will be reevaluated.
6. P. O. C.: CPT Wilson, 351-2915/3206.

BARBARA A. WILSON  
CPT, MS  
Administrative Resident

C O P Y

APPENDIX N

QUESTIONNAIRE SOLICITING NURSING STAFF INPUT  
AND GENERIC STOCKAGE LIST

C O P Y

132

HSUA-HQ

SUBJECT: Graduate Research Project--Centralized Material  
Management Program

TO: See Distribution

FROM: CPT Wilson,  
Admin Resident

DATE: 8 Apr 86 CMT 1  
CPT Wilson/kkc/1-3206

1. As part of my administrative residency, I am required to complete a graduate research project. The topic of my project is centralized material management programs for consumable medical supplies. The intent of the project is to be of some value to the MEDDAC in addition to the research effort on my part.

2. The purpose of implementing a centralized supply distribution/management system is to more effectively and efficiently use scarce resources. Nursing personnel would be relieved of requisition and other related administrative duties involved in maintaining adequate consumable supplies. Inventories would be decreased, freeing up dollars as well as space.

3. The three types of exchange systems being considered are PAR, cart exchange, and master cart. A PAR system utilizes present storage areas, shelving and cabinets. A specific PAR level is determined for each consumable supply. Personnel from the material distribution system on a predetermined schedule would come into the operational areas, inventory the supplies, and replenish the items to the PAR levels. A cart exchange system entails predetermined levels of consumable supplies placed on a cart in each operational area which is exchanged with a fully-stocked cart on a predetermined time schedule. A master cart system is similar to a PAR or cart system in that predetermined levels of supplies are established but instead of personnel either exchanging a cart or going into an area inventorying and then later returning with stock, a master cart is utilized with common items and taken to each area to restock either existing cabinets or carts without having to return to the central supply area.

4. An effective MDS (material distribution system) can only function with the combined efforts and cooperation of the nursing staff and administration (specifically Logistics). Attached are some recommendations involved in implementing an MDS and a recommended stock-age list. Your comments are of great value in making this project realistic and the first step to actually implementing such a system.

Atch

BARBARA A. WILSON  
CPT, MS  
Administrative Resident

DISTRIBUTION: See attached page.

C O P Y



## C O P Y

DISTRIBUTION: COL Clark, C, Dept of Nursing  
LTC Nelson, Asst C, Dept of Nursing  
LTC Rettig, C, NETS  
LTC Srenbo, C, Anes Nurs  
LTC Wolf, C, Clinical Nurs  
MAJ Brown, Head Nurse, 5E  
MAJ Butler, Head Nurse, 3E, NEN  
MAJ Elsseser, Head Nurse, 3W  
MAJ Green, Amb Nurs Supervisor  
MAJ Leverett, Head Nurse, 4W  
MAJ Mullins, Supv, OR/CMS  
MAJ Shelton, Head Nurse, 3E  
MAJ Ryba, E&N Supervisor  
MAJ Starr, E&N Supv  
Mrs. Brown, E&N Supv  
MAJ Canella, C, Log Div  
CPT Beach, HN, CMS  
CPT Bonnie, HN, 5W  
CPT Roy Harris, HN, MICU  
CPT Sheila Harris, HN, SICU  
CPT Lange, Inf Control Nurse  
MSG Hoskins, Chief Wardmaster  
SGT Kimbro, CMS  
SSG Moore, WM, CCU  
SSG Lopez, WM, SICU  
SFC Jordan, WM, NEN  
SSG Machado, WM, 3E, OB  
SSG Russell, WM, 3W  
SFC Dunn, WM, 5E  
SFC DeLuna, WM, 5W  
SFC Kennard, WM, 4W

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Please make comments in spaces provided or use additional paper as required.

Job Title/Position \_\_\_\_\_

Area of Operation \_\_\_\_\_

1. Stockage levels would be set for seven days but restocked every four days to allow for a three-day safety level. Restocking would be accomplished on Mondays and Fridays.

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2. The initial areas to be converted to this system would include 5W, 5E, CCU/MICU, SICU, 3 East, 3 West, NBN, L&D, and 4 West.

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3. Items would no longer be procured from CMS that are stocked on the carts.

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4. Outpatient prescriptions now handled by CMS would be filled by the MDS (Bldg. 4516) so that personnel can work the MDS as well as meet needs of patients.

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Atch

C O P Y

C O P Y

5. Emergency needs can be filled by the MDS Monday through Friday, 0730-1600, by phone and utilizing a specific form to insure that area is charged with that item.

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6. Units will not be required to maintain a duplicate check book for consumable medical supplies that MDS will be accounting for. Check books will still be required for requisitioning and purchasing other items.

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7. CMS will basically no longer function. Other areas that procure items from CMS will requisition items directly from the medical warehouse or the MDS. This does not affect CSS.

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8. What are your opinions of possibly having pharmacy handle needles and syringes in conjunction with the medication carts so that security will not be a concern.

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C O P Y

C O P Y

9. What are your comments on the three systems.

PAR--

Cart Exchange--

Master Cart--

10. Where would you locate your cart if there was the system selected?

11. If a cart exchange were selected, would you prefer a wire rack cart on wheels or a wall-mounted system similar to the linen system presently in use?

C O P Y

C O P Y

12. All items would be standardized unless approved by the Standardization Committee. Supplies in various areas would differ.

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13. Units of issue will be individual items rather than boxes, packages or cases.

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14. MDS would only be open M-F. AOD or nursing supervisor would have access on weekend for emergencies.

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15. Infrequently used items for specific types patients would be requisitioned from MDS rather than stocked on cart or shelves.

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16. Additional comments and remarks.

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C O P Y

These stockage levels were determined using inventory histories on 4 West and 3 West.

The inventories were completed by an MSC officer. Please feel free to correct, mark up and identify items not listed.

Please identify your operational area and return with your preferences.

Also annotate standard vs non-standard comments.

C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Applicator, Povi-Iodine 6510-01-008-7917	15	21	20	
Applicator wd Ctn Tip 6" 6515-00-905-1473	8	115	30	
Arm Elevator 6530-01-153-6316	1	6	3	
Acqua Pak, Sterile Water for Inhalation	1	2	2	
Accuset Administration Set	0	0	0	
Arm Board, Flexible	1	3	3	
Adh Tape, Surgical ½" x 10 yd woven 6510-00-926-8881	5	68	24	
Adh Tape, Surgical 1" x 10 yd woven 6510-00-926-8882	4	68	24	
Adh Tape, Surgical 2" x 10 yd woven 6510-00-926-8883	2	40	12	
Adh Tape, Surgical 3" x 10 yd woven 6510-00-926-8884	1	4	6	
Audible Humidifier Adapter	0	0	0	
Bag, Soluble 8465-01-093-9597	50	50	20	
Bandage, Adhesive ¾" x 3" 6510-00-597-7469 (100's) OR 6510-00-913-7909 (300's)	30	462	50	

C O P Y

C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Band, Cot Elast (Ace Wrap) 2" x 4½ yd 6510-00-935-5820	1	6	6	
Band, Cot Elast (Ace Wrap) 3" x 4½ yd 6510-00-935-5821	1	5	6	
Band, Cot Elast 4" x 4½ yd 6510-00-935-5822	1	7	6	
Band, Cot Elast 6" x 4½ yd 6510-00-935-5823	1	18	6	
Band Muslin Camouf (Cravat) 6510-00-201-1753	1	12	6	
Basin Emesis 6530-00-836-8134	10	169	30	
Bedpan, Disp 6530-01-049-0428	1	25	12	
Bottle, Tumbler Set, 1 Qt 7360-00-935-2837	6	50	25	
Brush, Idophor, Scrub 6530-00-C95-1618				
Bandage, Gauze, Elast 2 ply (Kerlix) 6510-00-582-7993	3	68	12	
Bandage, Gauze, Elast 6 ply (Kerlix) 6510-00-582-7992	2	39	12	
Basin, / Quart (Green) 6530-01-075-2723	4	69	24	
Basin, Wash, 9 Qt (Yellow) 6530-01-071-0225	0	0	6	

C O P Y



## C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Blood Recipient Set (Cutter Y Blood Set) 6515-00-89-3470	1	4	6	
Band, ID, Patient 6530-00-104-7631				
Bowl, Utility	1	2	2	
Biopsy Tray	0	0	1	
Bone Marrow Tray	1	1	1	
Basin, Sterile, Single 19	1	3	3	
Bowl, Sponge 6530-01-030-6861	1	5	3	
Collector, 1.5 Qt (Sharps) 6530-01-C68-7964	1	10	6	
Collector, 9.5 Qt (Sharps) 6530-01-C68-7965	1	2	2	
Catheter and Connector Suction, Endo, 18 FR 6515-00-458-8416				
Catheter and Connector Suction, Endo, 14 FR 6515-00-458-8411				
Catheter and Connector Suction, Endo, 10 FR				
Culturette, Anaerobic	1	3	6	
Cannula, Nasal, Oxygen, Plas Disp 6515-00-246-3782	0	0	2	
Cath Pack, Ureth Disp w/18 FR 6515-00-149-0105	1	8	6	

C O P Y

## C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Cath Pack, Ureth Disp w/16 FR 6515-00-149-0104	1	13	6	
Cath Pack, Ureth Disp w/30 cc Syringe 6515-00-149-9756	1	7	6	
Cover, Pillow, Plastic	1	1	3	
Cover Probe (IVAC)(25's)	28	35	25	
Cup, Medicine, 1 Ounce 6530-01-C68-7957	100	350	300	
Cup, Spec, 4½ Ounce 6530-00-837-7472	5	124	30	
Cast Protector, Arm 6515-00-142-8991	1	8	4	
Cast Protector, Leg 6515-00-142-8992	1	12	6	
Cath Disp w/balloon 10 FR				
Cath Disp w/balloon 12 FR				
Cath Disp w/balloon 14 FR				
Cath Disp w/balloon 16 FR				
Cath Disp w/balloon 18 FR				
Cath Disp w/balloon 20 FR				
Cath Disp, 10 FR				
Cath Disp, 12 FR				
Cath Disp, 14 FR				
Cath Urethral, 16 FR 6515-00-982-5076				
Cath Disp, 18 FR				

C O P Y

## C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Cath Disp, 20 FR				
Cath Disp, 8 FR				
Cath Disp, 18 FR w/30 cc Balloon				
Cup, Specimen, Stool 6530-00-027-6155	1	32	25	
Cannister, EZE-VAC 6515-00-C97-5758	1	4	1	
Catheter Plug and Drainage Tube Protector	1	8	6	
Comine Dressing	1	2	6	
Catheter, Suction, 22", 12 FR				
Catheter, External		3		
Cath--NDL IV, 16 GA, JELCO 6515-01-050-8248	1	5	6	
Cath--NDL IV, 18 GA, JELCO 6515-00-C97-7050	2	10	6	
Cath--NDL IV, 20 GA, JELCO 6515-00-C97-7270	2	10	6	
Cath--NDL IV, 22 GA, JELCO 6515-01-045-1266	2	12	6	
Cath--NDL IV, 146A, JELCO	0	0	1	
Cath, Robinson, 14 FR 6515-00-400-5465	0	2	1	
Cath, Robinson, 16 FR 6515-00-400-5466	0	6	2	
Catheter, Robinson, 12 FR	0	3	1	
Depressor, Tongue, Wood 6515-00-324-5500	8	101	50	

C O P Y

## C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Disp, Enema Unit 6530-00-073-6264	0	3	3	
Dress, Adh Elas, 2" x 3" (Op-Site) 6515-01-C68-4905	1	25	25	
Dressing, Sterile, Field 16" x 29"	0	3	2	
Dressing, Telfa, Non-Adhesive 8" x 3" 6510-00-C98-0193	1	7	6	
Dressing (IV), Transparent 10cm x 12cm	1	10	7	
Dressing, Transparent 6cm x 7cm	1	5	5	
DaVol Suction Connecting Tubing	0	0	0	
Disp Adult Diapers	0	0	4	
Eye Shield 6515-00-663-9801	0	0	2	
Entrainment, Nebulizer	0	0	0	
Fecal Spec Coll, PUF Kit 6550-01-082-9975	0	0	1	
Foley Collection Bag 6530-00-C95-1156	0	2	2	
Fracture Pan	1	6	6	
Foley Tray, Center Entry Bladder Care Kit	0	2	2	
Foam, Cavical, 1 g	0	0	0	
Feeding Bag, Flip Top 6515-01-072-3412	0	0	0	

C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Fan Jet Set	0	0	0	
Gauze, Absorbent, 3"x8" (Finemesh) 6510-01-140-5107	0	2	3	
Gauze, Absorbent, 18"x36" 6510-00-202-4000	0	0	2	
Gauze, Petrolatum, 1"x8" 6510-01-C68-2500	1	9	6	
Gauze, Petrolatum, 5"x9" (Xero-Form) 6510-01-CC8-2501	0	0	3	
Gauze, Petrolatum, 3"x8" 6510-00-202-0800	0	0	2	
Gauze, Petrolatum, 3"x36" 6510-01-112-6414				
Glove, Surg, Sz 6 6515-01-151-1790	0	0	3	
Glove, Surg, Sz 6½ 6515-01-151-1790	2	14	12	
Glove, Surg, Sz 7 6515-01-149-8840	1	14	12	
Glove, Surg, Sz 7½ 6515-01-149-8841	1	14	12	
Glove, Surg, Sz 8 6515-01-149-8842	1	19	16	
Glove, Surg, Sz 8½ 6515-01-149-8843	0	0	3	
Glove, Patient Exam, Sz Lg 8-9 6515-00-226-7692	0	6	3	
Gown, Isolation 6532-01-025-7941	0	0	2	

## C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Gloves, Pt Exam St, Md-Lg 6515-00-181-7449	5	54	30	
Gloves, Latex (BX) 6515-00-462-0832	15 Ind	1 Bx	1 Bx	
Gauze, Tubular, Bandage 6510-00-200-7015	0	0	2	
Gauze, Petrolatum, Packing Strip, ½"x72"	0	1	1	
Gauze, Bottles, Nu-Gauze Packing Strip, ¼"x5 yd 6510-01-003-7697	0	0	2	
Holder, Blood Collecting 6630-00-404-2220	0	1	2	
Hibiclensor Sol, 4%, 32 fl oz 6505-01-045-3255	0	0	1	
IV Inj Set, w/21 GA NDL, Ped 6515-00-089-2791				
IV Inj Set 2/23 Ga NDL, Ped 6515-00-720-7277	0	0	2	
IV Inj Set w/25 GA NDL	0	1	2	
Incentive Deep Breathing Exerciser	0	4	6	
IV Med Tubing 6515-01-156-2898	0	0	2	
IV Cath, JELCO, 18 GA 6515-01-156-2556	0	0	2	
IV Set Macro Drip 6515-01-156-2556	2	14	14	
IV Set Micro Drip 6515-01-174-9897	1	7	6	

C O P Y

C O P Y

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IV Set Secondary 6515-00-568-9865	0	7	6	
IV Inj Set w/19 GA NDL, Ped 6515-00-089-3433	0	0	2	
SAFTISET, 84" IV Set	0	0	0	
SAFTISET, 72" IV Set	0	0	0	
Ice pack, Personal Tomac 6530-01-172-1174	3	20	12	
Incision and Drainage Set 6515-01-153-4910	0	2	3	
Irrigation Kit 6530-00-117-8423	1	20	14	
IV Cath Placement Unit, 22 GA	0	3	2	
IV Cath Placement Unit, 20 GA	0	4	2	
IV Cath Placement Unit, 18 GA	0	1	2	
IV Cath Placement Unit, 16 GA	0	0	0	
IV Cath Placement Unit, 14 GA	0	0	0	
Intermittent Infusion Plus (Heparin Lock)	1	20	14	
Keri Lotion, 2 oz 6505-01-021-9546	2	32	24	
Kleenex	5	11	7	
K-Thermal Disp Pads, 14x20	0	5	2	
Kidney Stone Filters, LP--01	0	7	0	
Lanat Finger Bleed Disp 6515-00-431-2890	0	3	10	
Lids, Specimen, Stool Cups	1	19	14	

C O P Y

C O P Y

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Lubricant, Surg, 5 gm 6505-00-111-7829	0	11	7	
Lumbar Puncture Tray, Adult 6515-00-082-8264	0	0	0	
Mask, Oxygen, Plastic Disp 6515-00-392-0725	0	1	2	
Mask, Surg, Cupped Disp 6515-00-982-7493	2	14	14	
Montgomery Straps	0	2	0	
Mask, Oxygen, Peds	0	0	0	
NDL, HYPO, 18 GA, 1½" 6515-00-754-2834	8	86	50	
NDL, HYPO, 20 ga, 1½" 6515-00-754-2836	0	0	50	
NDL, HYPO, 21 ga 6515-00-754-2838	0	0	50	
NDL, HYPO, 22 ga, 1" 6515-00-754-2835	6	72	50	
NDL, HYPO, 23 ga, 3/4" 6515-00-754-2839	0	100	50	
NDL, HYPO, 25 ga, 5/8" 6515-00-655-5751	0	0	50	
NDL, 20 ga x 3½"	0	0	2	
NDL, 22 ga x 3½"	0	0	2	
NDL, Filter 6515-00-C97-5909	5	0	50	
NDL, Multidraw, 20 ga 6515-01-003-2368	2	16	25	

C O P Y



C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Occult Test Kit 6550-00-165-6538	0	0	10	
Pad, Abdominal, 8"x7½" 6510-00-775-5706	0	0	2	
Pad, Eggcrate, Foam 7210-01-174-2451	0	2	2	
Pad, Isopropal Alcohol 6510-00-786-3736	10	100	75	
Pad, Nail Polish Remover 8530-01-172-8876	4	42	25	
Pad, Io-Gone	3	30	25	
Oxygen Supply Tubing	0	0	2	
Protector, Heel/Elbow Adj	1	11	7	
Preventive Dentistry Kit 6520-00-890-2080	2	48	24	
Pad, Non-Adherent, 3"x4" 6510-00-111-0708	3	50	25	
Pad, Cotton (Eye Patches) 2½"x2-1/8" 6510-01-107-7575	0	0	10	
Pad, Sanitary, Heavy, Post-Surg OBS (PG-12's) 6510-00-559-6130	0	4	4	
Pad, Povidone-Iodine 6510-01-010-0307	10	50	75	
Papersheeting 6530-01-092-3914	0	2	2	
Pad, Bed, Linen 6530-01-119-0015	10	75	75	
Razors, Surg, Prep, Derma-Safe 6515-01-169-3155	5	37	36	

C O P Y

## C O P Y

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Quick-Cath, Intravascular Over-the-Needle Teflon	0	0	4	
Skin-Closure Adh, ½"x4" 6510-00-054-7254	6	104	25	
Skin-Closure Adh, ¼"x4" 6510-00-054-7255	0	0	25	
Slipper, Large, 8-10 6532-00-079-7902	0	3	Recommend These Be Requisitioned	
Slipper, XLG, 10-12 6532-00-079-7904	2	32	Recommend These Be Requisitioned	
Stopcock IV, Therapy, 3-Way Disp 6515-00-864-8864	2	37	24	
Control Syrine, 10cc Luer-Lok Tip	0	0	2	
Suspensory, Large, Scotol, Adj 6510-00-889-7021	0	0	2	
Suspensory, Med, Scotol, Adj 6510-00-889-7020	0	1	2	
Suspensory, XL, Scotol, Adj 6510-00-890-1368	0	2	2	
Suture Removal Kit, Disp 6515-00-436-1881	3	30	24	
Swab Culture, CAL-ALG Tip Type 1 6515-00-782-6482	1	18	24	
Syringe, Hypo, Disp, TB lcc 6515-00-982-4205	0	3	25	
Syringe, Hypo, Disp 3cc 6515-00-462-7348	6	77	50	

C O P Y

## C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Syringe, Hypo, Disp 5cc 6515-00-754-0406	5	50	50	
Syringe, Hypo, Disp 10cc 6515-00-754-0412	5	100	50	
Syringe, Hypo, Disp 20cc 6515-00-724-4606	6	76	50	
Syringe, Insulin, lcc Micro-Fine, V-100	0	0	10	
Syringe, Hypo, Disp 30cc 6515-00-724-4603	0	0	10	
Syringe, Hypo, Disp 50cc 6515-00-168-6913	0	0	10	
Syringe, Irrigation 50cc	0	0	10	
Sponge, Surgical, Gauze 2"x2", 8 Ply 6510-00-058-4421	4	25	25	
Sponge, Surgical, Gauze 4"x4", 4 Ply 6510-00-074-4579	5	25	50	
Specimen Collector Toilet Type	0	0	4	
Soap, Ivory Med	2	24	25	
Sodium, Chloride Irr 0.9%, 1000m 6505-01-075-0678	0	5	6	
Staple Remover, Disp, Skin 6515-01-125-3266	1	4	6	
Strays 7350-00-784-4205	0	1	Recommend These Be Requisitioned	
Strap, Web, Buckle (Lither Strips) 6530-00-784-4205			6	

C O P Y

## C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Syringe, Disp, 60cc	1	20	18	
Stockinette, Surg, 4"x25 yds 6510-00-559-3159	0	0	1	
Syringe Cart, Thumb Rest, Handle 6515-00-926-9043	0	0	2	
Syringe, Insulin 6515-01-C68-4038	0	0	10	
Stomach Tube, 12 FR	0	0	2	
Scapels, Sterile, Single Use	0	1	2	
Suction Kit w/Sterile Water, No Pour Pak	0	0	2	
Scrub Brush, Pre-Op (EZ-Scrub) 6530-00-C95-1618	2	10	12	
Sponges, Sterile, Gelfoam 12-7mm	0	0	0	
Sponge, Dental Pack	0	0	0	
Shrouds (Mortuary Gowns)	0	0	2	
Skin Barrier (Ostomy)	0	0	2	
Tube, Bio-Culture 6640-00-518-5462	0	12	12	
Tube, Bld, 7ml, Red Top 6630-00-145-1137	1	15	24	
Tube, Bld, 7ml, Purple Top 6630-01-119-8575	6	120	24	
Tube, Bld, 5ml, Blue Top 6630-00-145-1143	1	10	24	
Tube, Bld, 15cc, Red Top 6630-00-145-1143	1	10	24	

C O P Y

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day Usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Tube, Bld, 3ml, Red Top	2	24	24	
Tape, 3", paper 6510-00-890-1370				
Tubing, Surg, Coil Plastic, 3/16" 6515-01-101-1948	1	1	1	
Tube, Drainage, Surgical Rubber, Penrose 6515-00-926-8956	0	0	1	
Tube, Coiled, Bloodwarming 6515-00-926-2705	0	0	0	
Salem Sump Tube, 14 FR	0	0	0	
Salem Sump Tube, 18 FR	0	0	0	
Salem Sump Tube, 16 FR, 48" 6515-00-149-0316	0	0	0	
Salem Sump Tube, 12 FR, 48"	0	0	0	
Tube, Ventrol, Levin, 16 FR, 50"	0	0	0	
Tongue blades, Sterile 6510-01-140-5107	1	10	16	
Tube, Bio Uricult 0640-01-C68-7959	0	3	6	
Tape Remover Adhesive Aerosal (23490)	0	2	2	
Tube, Suction, Connecting 10' Long	0	0	0	
Uri-Meter, Drainage Bag 6530-00-C95-1156	0	2	3	
Urinal Mapa, Disp	0	2	2	

<u>Item Stocked</u> <u>Stock Number</u>	<u>Average</u> <u>Day usage</u>	<u>Highest</u> <u>7 Days</u>	<u>Recommended</u>	<u>Nursing Staff</u> <u>Preference</u>
Urinal, Female 6530-01-156-3389	0	1	0	
Urinary Leg Bags 6530-01-153-6503	0	1	1	
U-Bag, Ped, Sile	0	0	0	
U-Bag, Newborn	0	0	0	
Urostomy Pouches	0	0	0	
Washcloth, Disp	20	350	200	
Water for Irr, Sterile 1000ml 6505-01-075-0679	0	6	6	
Wound Closure Instrument Kit, Disp 6515-01-153-4888	0	1	2	
Wet Preps	4	16	20	

APPENDIX O

STOCKAGE LISTS FOR ALL INITIAL IMPLEMENTATION  
PATIENT CARE AREAS

Item Stocked Stock Number	MICU/ NICU	SW	SE Peds	4W	3W	3E	NBN	SICU/ RR	CMS	E/E
Applicator Povi-Iodine 6510-01-008-7917 SCWA88STICK 3ETADINE	30	10	30	10	10	10	—	20	—	50
Applicator wd Ctn Tip 6" 6515-00-905-1473	30	20	30	25	20	15	100	30	—	50
Arm Elevator 6530-01-153-6316	—	5	3	5	5	—	—	8	—	—
Acqua Pak, Sterile Water for Inhalation	5	2	10	2	2	—	—	32	—	2
Accuset Administration Set 6515-01-028-1015	10	5	6	5	5	5	3	24	—	—
Arm Board, Flexible	3	5	-0-	5	5	5	—	3	—	5
Adh Tape, Surgical 1/2" x 10 yd woven 6510-00-926-8881	24	6	10	6	6	6	6	12	—	10
Adh Tape, Surgical 1" x 10 yd woven 6510-00-926-8882	24	6	10	6	6	6	6	12	—	10
Adh Tape, Surgical 2" x 10 yd woven 6510-00-926-8883	12	6	5	6	6	6	—	6	—	10
Adh Tape, Surgical 3" x 10 yd woven 6510-00-926-8884	10	—	Ø	6	6	6	—	4	—	10
Audible Humidifier Adapter	—	—	Ø	—	—	—	—	—	—	—
Bath Sitz 6530-01-030-6861	—	1	—	1	—	1	—	—	1	1



Item Stocked Stock Number	MICU/ CCU	SC	SE PEDS	W	3C	3E	NBN	SICU/ RR	CMS	CR
Bag, Soluble 8465-01-093-9597	20	25	25	25	25	25	25	35	—	25
Bandage, Adhesive 3/4" x 3" 6510-00-597-7469 (100's) OR 6510-00-913-7909 (303's)	50	100	50	100	100 (100's)	100	—	20	—	2BX
Band, Cot Elast. (Ace Wrap) 2" x 4 1/2 yd 6510-00-935-5820	—	4	4	4	4	—	—	Ø	12	2BX
Band, Cot Elast. (Ace Wrap) 3" x 4 1/2 yd 6510-00-935-5821	3	5	4	5	5	—	—	Ø	12	2BX
Band, Cot Elast 4" x 4 1/2 yd 6510-00-935-5822	—	10	4	10	10	—	—	2	12	2BX
Band, Cot Elast 6" x 4 1/2 yd 6510-00-935-5823	—	2	4	6	6	—	—	2	12	2BX
Band Muslin Camouf (Cravat) 6510-00-201-1753	—	—	Ø	4	—	—	—	Ø	6	6
Basin Emesis 6530-00-836-8134	50	15	30	15	15	10	5	50	—	30
Bedpan, Disp 6530-01-049-0428	12	40	10	40	40	30	—	15	6	12
Box Syringe Disp 8115-00-C90-0294	1	1	1	1	1	1	1	1	1	1

Item Stocked Stock Number	Micu/ ECU	SW	SE Pdo	4W	3W	3E	NBN	STC/ RN	CMS	ER
Bottle, Tumbler Set 1 Quart 7360-00-935-2837	—	15	6	15	15	15	—	6	6	2
Brush, Idophor, Scrub 6530-00-C95-1618	6	6	6	6	6	6	6	6	6	6
Bandage, Gauze, Elast 2 ply (Kerlix) 6510-00-582-7993	6	10	10	20	10	4	—	Ø	12	12
Bandage, Gauze, Elast 6 ply (Kerlix) 6510-00-582-7992	—	10	10	20	10	4	—	12	12	12
Basin, 7 Quart (Green) 6530-01-075-2723	—	12	24	12	12	12	—	Ø	12	12
Basin, Wash, 9 Quart (Yellow) 6530-01-071-0225	12	6	Ø	6	6	6	6	15	6	6
Blood Recipient Set (Cutter Y Blood Set) 6515-00-89-3470	10	10	holdin lab for issue	10	10	3	2	10	10	10
Band, ID, Patient 6530-00-104-7631	—	Ø	Ø	Ø	Ø	Ø	Ø	10	Ø	10
Bowl, Utility	5	5	2	5	5	5	5	Ø	5	5
Biopsy Tray	—	Ø	CMS	Ø	Ø	Ø	Ø	1	5	2
Bone Marrow Tray	—	Ø	CMS	Ø	Ø	Ø	Ø	1	5	Ø
Basin, Sterile Single 19	5	6	6	6	6	6	6	Ø	12	6
Bottle Peri	Ø	Ø	Ø	Ø	2	2	Ø	Ø	2	2

## Bottle Peri

6530-01-030-6882

Item Stocked Stock Number	MICU/ CCU	5w.	5c Pudo	4w	3w	3c	NBN	STCU/ RR	QMS	EL
Bowl, Sponge 6530-01-030-6861	—	5	—	5	5	5	5	4	5	5
Collector, 1.5 Quart (Sharps) 6530-01-C68-7964	—	2	4	2	2	2	2	2	6	2
Collector, 9.5 Quart (Sharps) 6530-01-C68-7965	5	2	2	2	2	1	1	2	2	2
Catheter and Connector Suction, Endo, 18 FR 6515-00-458-8416	—	5	Ø	5	5	5	5	25	10	5
Catheter and Connector Suction, Endo, 14 FR 6515-00-458-8411	—	5	Ø	5	5	5	5	25	10	5
Catheter and Connector Suction, Endo, 10 FR	—	5	Ø	5	5	5	5	10	10	5
Culturette, Anaerobic	6	6	6	6	6	6	6	4	12	6
Cannula, Nasal Oxygen, Plas Disp 6515-00-246-3782	10	6	6 resp for this for issue	Ø	Ø	2	Ø	4	6	6
Cath Pack, Ureth Disp w/18 FR 6515-00-149-0105	6	1	Ø	1	1	2	—	6	—	1
Cath Pack, Ureth Disp w/16 FR 6515-00-149-0104	6	1	Ø	1	4	2	—	6	—	1
Cepacol 6505-01-101-2124	Ø	4	2	4	4	Ø	Ø	Ø	Ø	6

[illegible]

Item Stocked Stock Number	MICU/ CCU	SW	5E Pudo	4W	3W	3E	NBN	STIC/ RE	CMS	EL
Cath Disp, 10FR	—	2	Ø	2	2	2	Ø	—	2	2
Cath Disp, 12FR	—	2	Ø	2	2	2	Ø	—	2	2
Cath Disp, 14FR	—	2	Ø	2	2	2	Ø	—	2	2
Cath Urethral, 16FR 6515-00-982-5076	—	2	Ø	2	2	2	Ø	—	2	2
Cath Disp, 18FR	4	2	Ø	2	2	2	Ø	—	2	2
Cath Disp, 20FR	2	2	Ø	2	2	2	Ø	2	2	2
Cath Disp, 8FR	—	2	Ø	2	2	2	Ø	2	2	2
Cath, 18FR, w/30cc Balloon	2	2	Ø	2	2	2	Ø	2	2	2
Cup, Specimen, Stool 6530-00-027-6155	10	10	10	10	10	10	10	10	10	10
Cannister, EZE-VAC 6515-00-C97-5758	10	10	Ø	10	10	10	10	10	10	10
Catheter Plug and Drainage Tube Protector	6	6	Ø	6	6	6	6	Ø	6	6
Combine Dressing	6	6	6	6	6	6	6	6	6	6
Catheter, Suction 22", 12FR	—	2	Ø	2	2	2	2	2	2	2
Catheter, External	—	2	Ø	2	2	2	2	6	2	2
Cath - NDL IV 16 GA, JELCO 6515-01-050-8248	20	10	Ø	10	10	10	Ø	Ø	10	10
Angio Cath 22ga 6515-01-C56-3329	5	5	Ø	5	5	5	Ø	5	5	5

[illegible]



Item Stocked	Stock Number
164	

Cath - NDL IV  
18 GA, CATHLON; JELCO  
6515-00-C97-7050

~~Cath - NDL- IV~~  
~~IS GA, JELCO~~  
~~6515-00-697-7050~~

Cath - NDL IV  
20 GA, JELCO  
6515-00-C97-7270

Cath - NDL IV  
22 GA, JELCO  
6515-01-045-1266

Cath - NDL IV  
146A. JELCO

**Catheter, Robinson, 14FR  
6515-00-400-5465**

**Catheter, Robinson, 16FR  
6515-00-400-5466**

Catheter, Robinson, 12FR  
6515-00-400-5464  
Depressor, Tongue, Wood  
6515-00-324-5500

Disp, Enema Unit  
6530-00-073-6264  
Dis poz - A-Bag Med Bard

Dress, Adh Elas  
2" x 3" (Op-Site)  
6515-01-C68-4905

24 qa guide cath

Destruction unit  
6530-00-152-0047

#150102 105



Item Stocked Stock Number	MICU/ CCU	3U	5g Pdo	4U	3U	3E	NBN	SICU/ RR	CMS	ER.
Dressing, Sterile, Field 16" x 29"	20	4	2	4	4	4	2	6	10	10
Dressing, Telfa Non-Adhesive, 8" x 3" 6510-00-038-0193	10	5	✓	5	5	1	1	6	10	15
Dressing (IV) Transparent, 10cm x 12cm	10	20	✓	20	10	10	5	10	10	20
Dressing, Transparent 6cm x 7cm	5	20	✓	20	20	20	✓	25	20	20
DaVol Suction Connecting Tubing	12	6	✓	6	6	6	6	6	6	6
Disp Adult Diapers Engma Set Soap 6530-00-153-3690 Eye Shield	10	10	✓	10	10	10	10	10	10	10
6515-00-663-9801 Engma Fleet 6530-00-649-2215 Enfrainment, Nebulizer	3	3	✓	3	3	3	3	3	3	3
6515-00-663-9801 Fecal Spec Coll, PUF Kit 6550-01-082-9975	2	2	✓	2	2	2	2	2	2	2
Foley Collection Bag 6530-00-C95-1156	8	4	✓	4	4	4	✓	10	5	4
Fracture Pan	—	2	4	4	2	2	✓	2	2	2
Foley Tray, Center Entry Bladder Care Kit	2	2	✓	2	2	2	2	1	2	2
Foam, Cavical, 1 g	—	1	✓	1	1	1	1	1	1	1
Feeding Bag, Flip Top 6515-01-072-3412	4	2	✓	2	2	2	✓	2	2	2
Filter Transfusion 6515-00-C97-5284	2	2	✓	2	2	2	✓	2	2	2

Item Stocked 99 Stock Number	MICU/ CCU	SW	SE Pudo	4W	3W	3E	NBN	STCU/PC	CMS	ER.
Fan Jet Set	—	1	0	1	1	1	1	1	1	1
Gauze, Absorbent 3" x 8" (Finemesh) 6510-01-140-5107	—	2	0	2	2	2	2	5	2	2
Gauze, Absorbent 18" x 36" 6510-00-202-4000	—	5	0	5	5	5	5	0	5	5
Gauze, Petrolatum 1" x 8" (Xero-Form) 6510-01-C68-2500	—	5	3	5	5	1	1	1	5	5
Gauze, Petrolatum 5" x 9" (Xero-Form) <del>6510-01-C68-2501</del> 6510-01-120-2442	—	5	3	5	5	1	1	6	4	4
Gauze, Petrolatum 3" x 18" 6510-00-202-0800	—	6	0	6	6	1	1	2	1	6
Gauze, Petrolatum 3" x 36" 6510-01-112-6414	—	2	0	2	2	2	2	0	2	2
Glove, Surg, Sz 6 6515-01-151-1790	5	5	6	5	5	10	10	0	30	20
Glove, Surg, Sz 6 1/2 6515-01-151-1790	10	10	6	10	10	10	10	15	30	20
Glove, Surg, Sz 7 6515-01-149-8840	20	10	10	10	10	10	10	20	30	20
Glove, Surg, Sz 7 1/2 6515-01-149-8841	20	10	10	15	15	10	10	25	30	20

Item Stocked 167 Stock Number	Micu/ CCU	SW	5C Peds	4W	3W	3E	NIBN	SICU/ RL	CMS	ER
Glove, Surg, Sz 8 6515-01-149-8842	15	1	10	15	15	10	10	15	10	20
Glove, Surg, Sz 8 1/2 6515-01-149-8843	10	10	10	10	10	10	10	10	10	20
Glove, Patient Exam Sz Lg 8 - 9 6515-00-226-7692	20	10	20	10	10	50	10	0	10	10
Gown, Isolation 6532-01-025-7941	10	5	10	5	5	10	20	2	5	5
Gloves, Pt Exam St Md - Lg 6515-00-181-7449	30	25	20	25	25	10	10	25	25	25
Gloves, Latex (BX) 6515-00-462-0832	—	1 BX	1 BX	1 BX	1 BX	1 BX	1 BX	2 BX	0	2 BX
Gauze, Tubular, Bandage 6510-00-200-7015	2	1	1	1	1	1	1	0	1	1
Gauze, Petrolatum Packing Strip, 1/2" x 72"	—	1	0	1	1	1	0	1	0	1
Gauze, Bottles Nu-Gauze Packing Strip 1/4" x 5 yd 6510-01-003-7697	—	—	1	3	—	—	—	1	1	3
Holder, Blood Collecting 6630-00-404-2220	2	5	0	10	5	3	3	2	3	3
Hibiclensor Sol 4%, 32 fl oz 6505-01-045-3255	2	2	0	2	2	2	2	1	2	2

PIN ORTHO 1445	1	1	1	1	1	1	1	1
8315-00-C90-0372	5	5	5	5	5	5	5	5
Gauge Impreg 3x16	1	1	1	1	1	1	1	1
Adaptic	5	5	5	5	5	5	5	5
6510-00-890-1894	1	1	1	1	1	1	1	1
Gauge Iodoform 2"	12	12	12	12	12	12	12	12
6510-01-003-7696	25	25	25	25	25	25	25	25
Gauge Sponge	5	5	5	5	5	5	5	5
6510-01-140-5108	5	5	5	5	5	5	5	5
Gauge 4x8	5	5	5	5	5	5	5	5
6510-01-151-8145	5	5	5	5	5	5	5	5
CATHLON JELCO 18GA	2	2	2	2	2	2	2	2
6515-01-C56-3329	2	2	2	2	2	2	2	2
NEEDLE JELCO 2 1/2"	2	2	2	2	2	2	2	2
16 ga	2	2	2	2	2	2	2	2
6515-01-156-2872	2	2	2	2	2	2	2	2
FILTER IVEX	2	2	2	2	2	2	2	2
6515-00-C97-7042	2	2	2	2	2	2	2	2
ELECTRODE FREEZELED	2	2	2	2	2	2	2	2
MONITORING SILVER	2	2	2	2	2	2	2	2
CHLORIDE	2	2	2	2	2	2	2	2
6515-01-153-8651	2	2	2	2	2	2	2	2

Item Stocked Stock Number	MICU	CCU	SW	SE	POB	WU	BU	3E	NBN	SICU/IC	CMS	ER
IV Irrigation Set Volutrol 6515-00-088-8868	1		1	1	1	1	1	1	1	1	1	1
IV Set Adult 6515-01-056-3892	20		15	2		20	20	20	0	20	20	20
IV Set Ped 6515-01-056-3893	10		15	10		10	20	10	15	10	10	10
Irrigation Unit 6515-01-060-7038	3		3	3		3	3	3	3	3	3	3
Pump IV Set CAT #3704-01 6515-00-C97-6315	6		6	6		6	6	6	6	6	6	6
Jackson-Rees Disp w/3-liter Breathing Bag	1		1	1		1	1	1	1	1	1	1
Skin Prep Wipes 6510-01-153-4686	30		30	30		30	50	50	50	50	50	50
Gauze 3x3 Adaptic 6510-00-890-1893	5		5	5		5	5	5	5	5	5	5
Oxium 6840-01-149-3539	4		4	4		4	4	4	4	4	4	4

Item Stocked Stock Number	MICU/ CCU	SCU	5C Peds	4U	3U	3E	NBN	SICU/ RE	CMS	ER
IV Inj Set, w/21 GA NDL Pediatric 6515-00-089-2791	10	5	15	10	5	5	5	5	5	10
IV Inj Set 2/23 GA NDL Pediatric 6515-00-720-7277	10	5	15	5	5	5	5	2	10	10
IV Inj Set w/25 GA NDL	10	5	5	5	5	5	5	2	10	10
Incentive Deep Breathing Exerciser	3	5	2	5	5	5	2	10	Ø	2
IV Med Tubing 6515-01-156-2898	10	10	10	10	10	10	10	12	15	10
IV Cath, JELCO, 18GA 6515-01-068-3215	—	5	Ø	5	5	5	5	Ø	Ø	5
IV Set Macro Drip 6515-01-156-2556	14	10	Ø	10	10	10	Ø	15	10	15
IV Set Micro Drip 6515-01-174-9897	20	5	2Ø	5	5	5	Ø	15	15	15
IV Set Secondary 6515-00-568-9865	—	10	5	10	10	10	5	30	10	10
IV Inj Set w/19CA NDL Pediatrics 6515-00-089-3433	—	5	Ø	2	5	5	2	1Ø	2	2
SAFTISET, 84" IV Set	—	2	Ø	2	2	2	2	Ø	2	2
SAFTISET 72" IV Set	—	2	Ø	2	2	2	2	Ø	2	2
Ice Pack, Personal Tomac 6530-01-172-1174	—	10	5	10	10	10	10	25	Ø	20

Item Stocked Stock Number	MICU/ CCU	SW	SG Pads	4W	3W	3E	NBN	SIGU/ RR	CMS	EL
Incision and Drainage Set 6515-01-153-4910	2	5	1	5	5	1	1	5	1	5
Irrigation Kit 6530-00-117-8423	5	5	5	5	5	1	1	5	1	30
IV Cath Placement Unit 22 ga	—	5	5	5	5	5	5	5	5	5
IV Cath Placement Unit 20 ga	—	5	5	5	5	5	5	1	5	5
IV Cath Placement Unit 18 ga	—	5	5	5	5	5	5	1	5	5
IV Cath Placement Unit 16 ga 8"	—	10	5	10	10	10	10	10	10	10
IV Cath Placement Unit 14 ga	—	10	5	10	10	10	10	1	10	10
Intermittent Infusion Plug (Heparin Lock)	14	5	5	5	5	5	5	10	5	5
Keri Lotion, 2 oz 6505-01-021-9546	24	10	15	10	10	10	10	5	10	10
Kleenex Tissue 8540-01-156-3564	7	12	10	10	10	10	10	12	5	5
K-Thermal Disp Pads 14 x 20	2	5	2	5	5	2	5	1	5	5
Kidney Stone Filters LP - 01	—	5	5	2	2	2	2	5	10	5
Lanat Finger Bleed Disp 6515-00-431-2890	Autojects would be better & safer	10	10	10	10	10	10	2	10	20
Laxative kit Pre-Radio Exam 6505-01-153-3980	1	1	5	1	2	1	5	1	5	5

Item Stocked Stock Number	MICU/ CCU	SW	SE Reds	YW	3W	3E	NBN	STCU/ RN	OMS	ER
Kit Utility 6530-00-890-1786	4	4	4	4	4	4	4	4	4	4
Extension Set with T" Abbott #5/1612 6515-01-C56-8355	6	6	6	6	6	6	6	6	6	6
Monoject 1 1/2" 229a blue sterile 6515-01-C56-3325	20	20	20	20	20	20	20	20	20	20
Needle 1 dypo 1/2" 269a 6515-00-754-2837	5	5	5	5	5	5	5	5	5	5
Blade #15 6515-00-043-1783	5	5	5	5	5	5	5	5	5	5
Tape Adhesive 6510-00-203-5000	1	1	1	1	1	1	1	1	1	1
Dressing Change kit 6510-01-173-2446	2	2	2	2	2	2	2	2	2	2
Jamshidi Biopsy Needle 179a 6515-01-C56-8782	Ø	3	2	2	1	2	Ø	Ø	3	Ø
Needle Multi-Draw 229a 1 1/2" 6515-00-C97-4075	20	20	20	20	20	20	20	20	20	20



Item Stocked Stock Number	MICU/ CCU	SW	SE Pudo	SW	3W	3E	NBN	SICU/ RR	QMS	EL
Lids, Specimen Stool Cups	14	5	5	5	5	0	0	10	5	5
Lubricant, Surgical 5gm 6505-00-111-7829	7	10	20	10	10	10	10	15	10	10
Lumbar Puncture Tray Adult 6515-00-082-8264	2	2	0	2	2	1	1	1	1	2
Lumbar Puncture Tray Infant 6515-00-082-8264	5	5	5	5	5	5	5	55	5	5
Mask, Oxygen Plastic Disp 6515-00-392-0725										
Mask, Surg, Cupped Disp 6515-00-982-7493	14	30	20	20	20	50	20	14	20	20
Montgomery Straps	1	1	0	1	1	1	1	2	1	1
Mask, Oxygen, Peds										
NDL, HYPO, 18 ga 1 1/2"	5	10	0	10	10	15	10	50	20	20
6515-00-754-2834										
NDL, HYPO, 20 ga 1 1/2"	1	20	50	10	10	15	5	50	20	20
6515-00-754-2836										
NDL, HYPO, 21 ga	1	30	50	10	10	15	5	50	20	20
6515-00-754-2838										
NDL, HYPO, 22 ga, 1"	1	10	50	40	20	15	5	50	20	20
6515-00-754-2835										
NDL, HYPO, 23 ga, 3/4"	1	10	50	5	5	10	5	20	20	20
6515-00-754-2839										
Label Time-Flo Meter 1000's 7690-01-153-7077	10	20	10	20	25	20	10	10	0	10

6515-00-082-8264  
Lumbar Puncture Tray  
Adult  
6515-00-082-8264  
Lumbar Puncture Tray  
Infant  
6515-00-082-8264

Item Stocked Stock Number	MICU/ CCU	SW	5E Peds	4U	3U	3E	NBN	SICU/ RR	CMS	ER
NDL, HYPO, 25 ga, 5/8" 6515-00-655-5751	—	10	50	5	5	10	5	20	10	10
NDL, 20 ga x 3 1/2"	—	10	Ø	10	10	10	—	2	10	10
NDL, 22 ga x 3 1/2"	—	10	Ø	10	10	10	—	2	10	10
NDL, Filter 6515-00-C97-5909	—	10	40	10	10	10	—	20	10	10
Blood Colec. NDL, Multidraw, 20 ga 6515-01-003-2368	40	25	Ø	20	20	10	—	25	10	20
Occult Test Kit 6550-00-165-6538	10	10	10	10	10	10	10	10	10	10
Pad, Abdominal 8" x 7 1/2" 6510-00-775-5706	—	25	Ø	20	20	—	—	10	—	20
Pad, Eggcrate, Foam 7210-01-174-2451	4	5	1	5	5	2	Ø	2	Ø	Ø
Pad, Isopropal Alcohol 6510-00-786-3736	<del>2 BX</del>	1 BX	<del>1 BX</del>	2 BX	2 BX	1 BX	1 BX	<del>1 BX</del>	1 BX	2 BX
Pad, Nail Polish Remover 8530-01-172-8876	1 BX	1 BX	<del>1 BX</del>	<del>1 BX</del>	1 BX	1 BX	1 BX	1 BX	1 BX	2 BX
Pad, Io-Gone	—	—	Ø	—	—	—	—	10	10	10
Oxygen Supply Tubing	5	5	2	5	5	2	Ø	5	10	2
Protector, Heel/Elbow Adj	7	5	2	5	5	—	—	4	Ø	2
QB Pock 5530-01-146-4262	—	—	—	—	—	5	—	—	2	1

[illegible]

Item Stocked  
Stock Number

Skin-Closure Adh  
1/4" x 4"  
6510-00-054-7255

Slipper, Large, 8 - 10  
6532-00-079-7902

Slipper, XLG, 10 - 12  
6532-00-079-7904

Stopcock IV, Therapy  
3 Way Disp  
6515-00-864-8864

Control Syringe  
10 cc Luer-Lok Tip

Suspensory, Large  
Scotal, Adj  
6510-00-889-7021

Suspensory, Med  
Scotal, Adj  
6510-00-889-7020

Suspensory, XL  
Scotal, Adj  
6510-00-890-1368

Suture Removal Kit, Disp  
6515-00-436-1831

Swab Culture  
CAL-ALG Tip, Type 1  
6515-00-782-6482

MICU/

5w

SE  
Pudo

4w

3w

3E

NBN

STCU/  
RN

CMS

E2

—

10

0

10

10

10

—

5

5

10

10

0

10

6

10

—

10

10

10

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5

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15

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10

5

10

10

5

3

5

10

2

24

20

20

20

20

20

20

5

20

20

Item Stocked Stock Number	MICU/ cc	SW	SE peds	W	3W	3E	NBAI	SICU/ RE	CMS	ER
Syringe, Hypo, Disp TB 1cc 259a 6515-00-982-4205	25	10	15	10	10	10	10	25	25	10
Syringe, Hypo, Disp 3cc 6515-00-462-7348	50	15	50	20	15	10	10	50	10	10
Syringe, Hypo, Disp 5cc 6515-00-754-0406	50	20	50	10	5	5	5	50	10	10
<sup>Luer-Lock</sup> Syringe, Hypo, Disp 10cc 6515-00-754-0412	100	20	50	10	5	5	5	50	10	10
Syringe, Hypo, Disp 20cc 6515-00-724-4606	50	10	5	5	5	5	5	20	10	10
Syringe, Insulin, 1cc <del>5053</del> Micro-Fine, V-100 <del>6515-01-058-5953</del>	25	10	10	10	5	5	1	20	10	10
Syringe, Hypo, Disp 30cc 6515-00-724-4603	10	10	5	5	6	5	5	10	10	10
Syringe, Hypo, Disp 50cc 6515-00-168-6913	10	1	2	1	1	1	1	10	10	10
Syringe, Irrigation 50cc	10	1	5	1	1	1	2	10	10	10
Sponge, Surgical, Gauze 2" x 2", 8 Ply 6510-00-058-4421	50	50	20	75	50	50	20	50	100	100
Sponge, Surgical, Gauze 4" x 4", 4 Ply 6510-00-074-4579	50	25	50	50	50	50	50	50	1	50
Specimen Collector Toilet Type	1	2	2	2	2	2	2	10	2	2
Sanitary Belt 8445-01-151-3564	1	2	0	0	4	5	0	0	0	2

Item Stocked Stock Number	MICU/ CCU	SW	5L Pudo	4W	3W	3E	NBN	SIGU/ RR	QMS	EL
Soap, Ivory Med	25	10	20	10	15	10	2	30	0	0
Sodium, Chloride Irr 0.9%, 1000m 6505-01-075-0678	10	10	10	10	10	10	10	10	10	10
Staple Remover Disp, Skin 6515-01-125-3266	1	2	2	2	6	6	0	4	10	10
Straws 7350-00-784-4205	50	50	50	50	50	50	0	50	0	0
Strap, Web, Buckle (Lither Straps) 6530-00-784-4205	6	6	6	6	6	6	0	6	0	12
Spoken Tip 6515-00-097-6466 Syringe, Disp, 60cc <del>6515-00-097-6466</del>	—	6	0	10	10	10	10	0	10	10
Stockinette, Surgical 4" x 25 yds 6510-00-559-3159	—	1	1	1	1	1	1	1	1	1
Syringe Cart, Thumb Rest, Handle 6515-00-926-9043	—	1	0	1	1	1	1	2	1	1
Syringe, Insulin 6515-01-068-4038	—	2	0	2	2	2	2	2	2	50
Stomach Tube, 12FR 6515-00-199-0315	—	—	0	2	2	2	2	2	2	2
Scalpels, Sterile SZ10 Single Use 6515-01-149-8097	10	2	2	2	5 #15 5 #11	2 #15 2 #11	2	2 #15 2 #11	2	2
Suction Kit w/Sterile Water, No Pour Pak with 14ga cath	—	5	0	5	5	5	5	black 10	5	5
Speedi-Arm Bands 6515-01-056-8733	2	2	2	2	1	2	2	2	2	2

# Item Stocked Stock Number

SWAB LEMON  
6510-01-140-5104

TUBE BIO CULTURETTE  
100S 6640-00-518-5462

STRAP MONTGOMERY  
6510-00-003-3058

SPONGE DRAIN SOF-WICK  
6510-01-122-5564

SPONGE SURG 4x4  
6510-00-116-1311

PAPER RECORDING  
6515-00-097-3997

IV Sponges  
6510-01-177-1984

MICU/

10

5

1

1

6

2

30

5W

10

5

1

1

6

1

30

5E  
Reds

10

5

1

1

6

1

30

4W

10

5

1

1

6

1

30

3W

8

5

1

1

6

1

35

3E

10

5

1

1

6

1

30

NBN

10

5

1

1

6

1

30

STCU/  
RL

10

5

1

1

6

2

30

QMS

10

5

1

1

25

1

30

ER

10

5

1

1

10

2

30

# Item Stocked Stock Number

88

STOCKING BT-B  
6515-00-0977-3943

STOCKING ANTI-EM BT-1  
6515-01-153-4855

STOCKING AT-1  
6515-01-153-4856

STOCKING AT-2  
6515-01-153-4857

STOCKING AT-3  
6515-01-153-485

STOCKING BT-  
6515-01-153-4911

STOCKING BT-4  
6515-01-153-5247

Potassium Oxalate  
13MM grey top  
6640-01-055-7328

Blade #11  
6515-00-6600010

Tryptic Soy Broth  
Anaerobic 7D  
6550-00-264-7658

Tryptic Soy Broth  
Anaerobic 6B  
6550-00-264-7670

MICU/

2 2 3 3 2 2 2 5 1 6 6

5W

2 2 3 3 2 2 2 5 1 6 6

SE  
Reds

~~2~~ ~~2~~ ~~3~~ ~~3~~ ~~2~~ ~~2~~ ~~2~~ 5 1 6 6

4W

2 2 3 3 2 2 2 5 1 6 6

3W

2 2 3 3 2 2 2 5 1 6 6

3E

2 2 3 3 2 2 2 5 1 6 6

NBN

~~2~~ ~~2~~ ~~3~~ ~~3~~ ~~2~~ ~~2~~ ~~2~~ 5 1 6 6

STCU/  
RN

2 2 3 3 2 2 2 5 1 6 6

OMS

2 2 3 3 2 2 2 5 1 ~~6~~ ~~6~~

ER

2 2 3 3 2 2 2 5 1 ~~6~~ ~~6~~



Item Stocked 18 Stock Number	MRCU/ CCU	SW	SE yprds	4u	3u	3c	NBN	SICU/ RL	CMS	EL
Scrub Brush, Pre-Op (EZ-Scrub) 6530-00-C95-1618	—	10	10	10	10	10	10	5	Ø	25
Sponges, Sterile Gelfoam, 12 - 7 mm	—	2	Ø	2	2	2	2	Ø	Ø	Ø
Sponge, Dental Pack	—	1	Ø	1	1	1	1	Ø	Ø	2
Shrouds (Mortuary Gowns)	2	2	Ø	2	2	2	2	1	2	2
Skin Barrier (Ostomy)	—	5	Ø	Ø	2	2	Ø	2	2	Ø
Tube, Bio-Culture 6640-00-518-5462	12	15	10	15	15	230	5	20	20	20
Tube, Bld, 7 ml Red Top 6630-00-145-1137	50	15	20	15	10	10	—	24	10	20
Tube, Bld, 7 ml Purple Top 6630-01-119-8575	50	15	20	10	10	10	—	24	20	20
Tube, Bld, 5 ml Blue Top 6630-00-145-1143	50	15	20	5	10	10	—	24	20	20
Tube, Bld, 15 cc Red Top 6630-00-145-1143	50	10	10	10	10	10	—	10	20	20
Tube, Bld, 3 ml, Red Top	50	5	30	20	10	—	5	24	20	20
Tape, 3", paper 6510-00-890-1370	—	3	Ø	2	2	—	2	2	2	2
Surgical Pack 6530-01-036-6659	1	1	Ø	1	1	1	Ø	1	5	Ø

Item Stocked  
Stock Number

Tape, paper 1/2"  
6510 - 00 - 890 - 1369

Tape, paper 2"  
6510 - 00 - 890 - 1371

Tape, paper 1"  
6510 - 00 - 890 - 1372

MICU/ CCU	5U	5E Rack	4U	3U	3E	UBN	STCU/ RN	QMS	ERC
3	3	3	3	3	3	3	3	3	6
1	1	1	1	1	1	1	1	1	6
3	3	3	3	3	3	3	3	<del>3</del>	6

Item Stocked Stock Number	MICU/ ECU	SC	SC pedo	WU	3U	3E	NBN	SICU/ RN	CMS	ER
Tubing, Surgical Coil Plastic, 3/16" 6515-01-101-1948	—			1	1	1	1	1	1	0
Tube, Drainage, Surgical Rubber, Penrose 6515-00-926-8956	1		1	1	1	1	1	2	1	6
Tube, Coiled, Bloodwarming 6515-00-926-2205	3	3	Blood Bank for issue	3	3	3	3	10 <sup>NS</sup>	3	3
Salem Sump Tube, 14FR 6515-00-851-0310	8	2	0	2	2	2	2	2	2	2
Salem Sump Tube, 18FR	8	2	0	2	2	2	2	4	2	2
Salem Sump Tube 16FR, 48" 6515-00-149-0316	2	2	0	2	2	2	2	2	2	2
Salem Sump Tube 12FR, 48" 6515-00-149-0315	2	2	0	2	2	2	2	2	2	2
Tube, Ventrol Levin, 16FR, 50"	—	2	0	2	2	2	2	0	2	2
Tongue Blades, Sterile 6510-01-140-5107	—	15	15	15	15	15	20	20	20	20
Tube, Bio Uricult 0640-01-C68-7959	6	6	0	6	6	6	6	0	0	12
Tape Remover Adhesive Acrosol (23490)	—	1	1	1	1	1	1	10	1	1
Tube, Suction, Connecting, 10' Long	2	2	1	2	2	2	2	5	2	2
Tube Stomach 18FR 6515-00-917-1912	2	2	2	2	1	2	2	2	2	2

[illegible]

# Item Stocked Stock Number

185

URO-SHEATH LARGE AHS  
1#21868  
6530-00-766-9516

SHEATH URINARY MEDIUM  
6530-00-095-1662

SPUTUM COLLECTING  
SYSTEM  
6530-01-119-7678

MICU/  
PCU

2

2

6

SW

2

2

6

SE  
Rads

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4U

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2

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3U

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3E

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2

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NBN

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6

STCU/  
RL

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2

6

OMS

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ER

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6

Item Stocked Stock Number	MICU	ICU	SE ped	WU	3W	3E	NBN	SICU RL	CPMS	EL
Tube 3cc Blood Purple Top	10	5	30	10	10	10	5	24	Ø	25
24 ga. quick cath	5	20	25	20	20	20	10	10	Ø	20
Tube 3cc Blood Blue Top	10	5	30	10	10	10	5	24	Ø	25
Bunitrol IV Admin. strainer Sut with ISOcc clamps Pediatric	5	Ø	30	Ø	Ø	Ø	10	5	Ø	10
IV cath placement unit 19 ga 24"	2	2	2	2	2	2	2	2	2	2
IV cath placement unit 19 ga 2"	10	10	10	10	10	10	10	10	10	10
IV cath placement unit 16 ga 24"	2	2	2	2	2	2	2	2	2	2
<del>Don't Stock 6520 Soft Suction Cup Denture w/Lid</del>										
Cup Denture w/Lid 153-6337 6520-01-570-380	2	6	Ø	6	6	2	Ø	6	Ø	2

APPENDIX P

MANPOWER SURVEY REPORT--SCHEDULE X--  
FOR MATERIEL DISTRIBUTION SYSTEM

C O P Y

SECTION D--SPECIFIC REMARKS

Commander

1. Reference HSC Reg 10-1.
2. Workload is projected for implementation of Materiel Distribution Section (MDS). MDS to be implemented in phases commencing February 1986 and be completely operational by June 1986. Workload data is projected from operational MDS at Fort Leonardwood and Fort Campbell which are comparable in size to Reynolds Army Hospital.
3. There is no yardstick applicable to the MDS. Local appraisal is used to compute minimal essential requirements for 24 hours per day, 7 days per week operation.
4. Function Description--Cart Distribution System--The Cart Distribution System is a process by which 24 hour stockage of all routinely used, demand supported items, for designated patient care and patient care support areas are automatically replenished based on past demands and anticipated requirements. These supplies are stored on mobile carts or in stationary storage for PAR level stockage. An important feature of the system is that those supplies selected for cart stockage no longer need requisitioning by patient treatment personnel. For areas with carts there are two sets of carts, one set is in use while the other set is being inventoried and replenished. For areas on PAR level (Static Storage) these areas are inventoried and replenished by MDS personnel. In addition to the exchange inventory and replenishment of carts the following duties must be performed in the MDS: detailed costing; ordering of stocks; restock bulk storage areas from Medical Supply Warehouse receipts; clean, inventory, restock warehouse loose-issue shelves daily and perform QC functions; make over-the-counter issues to hospital ward and clinic personnel seven days a week; provide issue, five days a week, for physician prescribed items to outpatients.
5. Staffing Requirements and Workload:
  - a. One Supervisory Supply Technician: Responsible for the planning and direct supervision of the activities of MDS. Supervisor must conduct special studies in the areas of supply management and assume full responsibility for actions within the assigned areas. Incumbent is required to make decisions in order to influence and insure the smooth operation of MDS by staying abreast of trends and situations which are affecting the accomplishment of the supply operation. Supervisor formulates and enforces policy concerning MDS operations.
  - ( ) Directly supervises personnel engaged in the financial and line item accounting of materiel that is issued through the MDS. This includes the programming of requirements, the requisitioning, receipting, warehousing and issuing of supplies.

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(2) Conducts necessary personnel management of subordinate personnel. Schedules and approves leave. Sets performance standards and makes formal appraisals of performance. Counsels employees on problems, takes formal and informal corrective action on conduct or performance problems. Initiates proposals for disciplinary or commendatory action where applicable.

Local Appraisal:

Rationale: Past experience has shown this function consumes one full work year; therefore 1 person, 5 days per week X 8 hrs per day = 40 std hrs per week  $\div 1 \times 1.11 = 1.11$  or 1 person.

b. One Accounting Technician: Required to maintain cost ledgers, distribute costs and monitor obligations. Individual posts customers issues into manually prepared ledgers and journals to accumulate cost by Account Processing Code (APC); reviews supply usage by cost code, consolidates and prepares cost adjustment documents for Comptroller reviews and compares unit price on receipts against MDS stockage list and updates prices where necessary; reviews on-call slips for accuracy in charges and makes necessary corrections in charge credits; prepares reports pertaining to supply accounting procedures from data compiled daily; provides secretarial support as required.

Local Appraisal

Rationale:

(1) Manually compiles cost data from activity listings and on-call issues	80 hrs
(2) Manually posts summary of issues daily into accounts by customer APC	20 hrs
(3) Post price changes to activity listings	10 hrs
(4) Consolidate daily cost against activities and prepares monthly cost adjustment report Comptroller	20 hrs
(5) Maintain checkbook, check financial costings and prepare monthly report	40 hrs
(6) Secretarial support	5 hrs
	<u>175 hrs</u>
	TOTAL

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175 hrs ÷ 168 hrs X 1.11 = 1.15 or 1 requirement

c. Three Supply Clerks are required to maintain inventory records. Individuals compute requisition objectives, order supplies, research requests, post receipts and issues, maintain document register, perform inventory of stocks and visit patient care centers to determine special requirements, resolve complaints and perform customer assistance; review issue slips to obtain data for establishing new supply levels for patient care center support; prepare new cart inventory lists; maintain stock data cards.

Local Appraisal

Rationale:

(1) Order stockage for approximately 1300 line items	120 hrs
(2) Maintain stockage records, monitor dues-in and dues-out and update computer generated listing	130 hrs
(3) Make cost analysis and studies to determine adequacy of the cart system in all of our supported activities. Perform customer assistance	90 hrs
(4) Compute requisition objective for each line item stocked	20 hrs
(5) Make changes to activity listings (additions, deletions and stock number changes)	40 hrs
(6) Perform inventory of stockage in MDS	80 hrs
(7) Files supply documents, regulations and publications, drafts DF's and assists supervisor as required	20 hrs
TOTAL	500 hrs

500 hrs ÷ 168 x 1.11 = 3.31 or 3 requirements

d. One Warehouse Worker Leader is required to supervise and manage work performed by warehouse personnel. Individual assigns warehouse personnel to shifts and schedules/approves leave for all warehouse personnel. Assigns work tasks to warehouse personnel and exercises leader responsibilities in the receipt and storage of consumable medical materiel; leads workers in the

C O P Y

**REPORTS CONTROL SYMBOL**  
**CSFOR-76**

For use of this form, see AR 570-4; the proponent agency is DCSPER.

**MAJOR STAFF ELEMENT**

NOTES

BRANCH

SECTION ON LIMIT

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024000000 00000 00 000110000000

See Section D for description of work to be performed by Cart Distribution Section (VMS)

**YARDSTICK CODE**

## Local Appraisal

## SECTION A - SUMMARY OF MANPOWER

[illegible]**VAROSTICK ALLOWANCE COMPUTATION**

## SECTION 8 - PERFORMANCE DATA

[illegible]

FORM 140-4  
NOV 73

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.

FORM 140-4  
1 NOV 73

## SECTION D - SPECIFIC REMARKS

COMMANDER

## 1. Reference HSC Reg 10-1.

2. Workload is projected for implementation of Materiel Distribution Section (MDS). MDS to be implemented in phases commencing February 1986 and be completely operational by June 1986. Workload data is projected from operational MDS at Fort Leonardwood and Fort Campbell which are comparable in size to Reynolds Army Hospital.

3. There is no yardstick applicable to the MDS. Local appraisal is used to compute minimal essential requirements for 24 hours per day, 7 days per week operation.

4. Function Description - Cart Distribution Section - The Cart Distribution System is a process by which 24 hour stockage of all routinely used, demand supported items, for designated patient card and patient care support areas are automatically replenished based on past demands and anticipated requirements. These supplies are stored on mobile carts or in stationary storage for PAR level stockage. An important feature of the system is that those supplies selected for cart stockage no longer need requisitioning by patient treatment personnel. For areas with carts there are two sets of carts, one set is in use while the other set is being inventoried and replenished. For areas on PAR level (Static Storage) these areas are inventoried and replenished by MDS personnel. In addition to the exchange inventory and replenishment of carts the following duties must be performed in the MDS: detailed costing; ordering of stocks; restock bulk storage areas from Medical Supply Warehouse receipts; clean, inventory, restock warehouse loose-issue shelves daily and perform QC functions; make over the-counter issues to hospital ward and clinic personnel seven days a week; provide issue, five days a week, for physician prescribed items to outpatients.

## 5. Staffing Requirements and Workload:

a. One Supervisory Supply Technician: Responsible for the planning and direct supervision of the activities of MDS. Supervisor must conduct special studies in the areas of supply management and assume full responsibility for actions within the assigned areas. Incumbent is required to make decisions in order to influence and insure the smooth operation of MDS by staying abreast of trends and situations which are affecting the accomplishment of the supply operation. Supervisor formulates and enforces policy concerning MDS operations

(1) Directly supervises personnel engaged in the financial and line item accounting of materiel that is issued through the MDS. This includes the programming of requirements, the requisitioning, receipting, warehousing and issuing of supplies.

(2) Conducts necessary personnel management of subordinate personnel. Schedules and approves leave. Sets performance standards and makes formal appraisals of performance. Counsels employees on problems, takes formal and informal corrective action on conduct or performance problems. Initiates proposals for disciplinary or commendatory action where applicable.

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inventory and issuing of consumable medical materiel to hospital activities and outpatients; issues over-the-counter supplies to outpatients; performs quality control for stocks in the MDS.

Local Appraisal

Rationale:

(1) Leader/Supervisory duties	120 hrs
(2) Quality Control of MDS stocks	30 hrs
(3) Provide over-the-counter issues to outpatients with prescriptions	20 hrs
	<u>170 hrs</u>
	TOTAL

170 hours ÷ 168 X 1.11 = 1.12 or 1 requirement

e. Ten Warehouse Workers are required to clean, inventory, restock and exchange supply carts to include static stock in treatment areas. Carts contain supplies for one normal 24 hour level, there are two sets of carts for each supported activity: one set is in use while the other set is being inventoried and replenished assuring constant availability of supplies seven days a week/24 hours per day.

Local Appraisal

Rationale:

(1) Inventory and replenish carts seven days per week	1,000 hrs
(2) Restock static stock areas	100 hrs
(3) Clean and disinfect carts	80 hrs
(4) Exchange carts	200 hrs

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(5) Receive supplies, restock loose issue area

TOTAL

200 hrs
1,580 hrs

1,580 hrs ÷ 168 X 1.11 = 10.4 or 10 requirements

This includes four minimum staffing requirements for extended hours of operation.

	Staffing Per Shift			Total Staff	Days/Wk	Hrs	Total Manhours
	Day	Evening	Night				
Weekdays	1	+	1	=			
Weekends					X	8	336.0
Holidays	1	+	1	+			
					X	8	225.6
							TOTAL
							561.6

561.6 ÷ 168 X 1.11 = 3.7 or 4 requirements

6. Recommended Staffing:

- 1 Civ Supervisory Supply Technician
- 1 Civ Accounting Technician
- 3 Civ Supply Clerks
- 1 Civ Warehouse Worker Leader
- 10 Civ Warehouse Workers

C O P Y

## C O P Y

HSUA-AMF

SUBJECT: Submission of Interim Schedules X

TO: See Distribution

FROM: Ch, Compt Div

DATE: 3 Jan 86

CMT 1

Mrs. Pollock/tl/1-2916

## 1. Reference:

a. Letter, HSOP-FRS, 24 Dec 85, Subject: Guidelines for Submission of Requests to Adjust Manpower Requirements.

b. DF, HSUA-AM-FD, 8 Mar 84, Subject: Submission of Interim Schedules X.

## 2. This DF supercedes criteria provided in reference 1b.

## 3. Reference 1a provides the following guidance/criteria for submission of Interim Schedules X.

a. Utilization of manpower is equal to currently approved requirements and the work center is experiencing a continued increase in workload. (Although manpower requirements may not be fully allocated, temporary hires, overhires, overtime, borrowed labor, contract personnel or other available resources may be used in satisfying this provision.)

b. Management indicators (beds occupied, admissions, live births, clinic visits and MCCU) reflect a ten percent increase since the last manpower survey or previous Interim Schedule X and the provisions of paragraph 3a above have been met.

c. In cases where workload in one clinical work center (inpatient or outpatient) has increased significantly and the provisions of paragraph 3a above have been met, but the total clinical workload for the activity has remained relatively stable, off-setting decreases must be identified in other work center(s).

## d. Documentation of a new mission or element:

(1) If assigned by higher headquarters, the documentation authorizing that mission/element must accompany the submission.

(2) When internally created new missions/elements are generated by an activity, documentation (including Schedules X realigning requirements from existing work centers to the new work center) will be submitted for approval.

e. Documentation of changes in operational capabilities (due to new construction, facility upgrades, receipt of new equipment, etc.); unless the provisions of paragraph 3a and 3b have been met, offsetting decreases should be identified.

## 4. Reference 1a also provides additional guidance as follows:

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HSUA-AMF

SUBJECT: Submission of Interim Schedules X

CMT 1

a. Internal realignment of manpower requirements within a functional area (e.g., Logistics Division or Department of Pathology) for the purpose of effecting improved organization may be accomplished in accordance with HSC Reg 10-1. Such requests should provide a complete audit trail and rationale explaining improved operation.

b. Adjustments to manpower requirements in work centers undergoing study for the development of staffing standards will be suspended upon implementation of the initial process of the study which is the preliminary phase. This suspense will remain in effect until completion of the standard study.

c. Application of approved staffing standards will be accomplished as directed by HSC.

ROGER E. HOLBERTON  
LTC, MS  
Chief, Comptroller Division

DISTRIBUTION:

A

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